

InfoWorld

The Newsweekly for Microcomputer Users

November 22, 1982

Volume 4, Number 46

\$1.25



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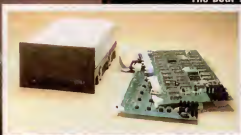
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Rover: slices of Apple, Osborne technology

New portable features stringy floppy drives

By Paul Freiburger, IW Staff

Rover Computer Corporation, a start-up company in Sunnyvale, California, has announced a computer that utilizes slices of technology from the Osborne and Apple computers. If these technologies are realized effectively, Rover's computer could compete with both.

Like the Osborne, the Rover I is a portable unit with a small screen. The Rover I uses dual 8-bit 6512 microprocessors, computers on a chip that resemble the 6502 processors used in the Apple II computer.

Britt Nelson, cofounder of Rover Computer Corporation, explains that when completed early in 1983, the Rover I will fit into a standard-size attache case and weigh less than 20 pounds. Without the battery attachment that can provide up to six hours of operation, the system will weigh

significantly less.

The Rover I will come with 128K RAM, a standard keyboard with ten function keys, serial and parallel ports and an RS-232 interface.

As a standard storage device, the Rover I will have a stringy floppy tape drive that can store up to 125K of data on a cartridge slightly larger than a

business card.

(A stringy floppy tape drive is a high-speed, random-access cassette drive for microcomputers.)

The bit-mapped display monitor will provide a high-resolution display of 161,280 pixels (individually addressable picture elements).

The standard screen is a 5½-inch di-

agonal monitor that will offer 80 columns and 20 lines, but the computer can also connect to any standard-size CRT.

Thanks to the use of the 6512 microprocessors, the machine is compatible with Apple DOS 3.3 and can run much Apple II software in the same way the Apple III does, via an emulation program, if a user purchases a floppy-disk drive for the system.

See Rover, page 4

Clothing chain 'dresses' micro market

Topps & Trowers, Software Guild open Information Please

By Scott Mace, IW Staff

Topps & Trowers, a chain of 75 clothing stores in the western and southern U.S., is trying the software-store business on for size.

Next month a prototype Information Please software store will open in the San Francisco area, and a nationwide chain of franchised software stores will follow. Information Please is a joint venture between Topps & Trowers and The Software Guild, a Hayward, California, software distributor.

The Software Guild will supply software packages and other supplies for Information Please. The Guild is headed by John Martin-Musumeci, 36, who put together many of ComputerLand's original concepts and later founded On-Line Microcomputer Centers, a ComputerLand competitor.

Many Topps & Trowers stores are located in shopping malls, but Information Please vice-president and general manager Robert H. Ponzetti said Information Please will launch stores both in malls and in free-standing "high-traffic" locations.

Ponzetti, 37, is former vice-president and general manager of Vi-diom Stores, a chain that retails home computers and video products.

Information Please will carry a variety of home, business and educational software for various computers. Martin believes software is becoming more important to customers than hardware.

"Hardware companies would have you believe their computer does all these wonderful things (by themselves)," Martin said. "But

See Franchise, page 4



John Martin-Musumeci—founder and head of The Software Guild, a software distributor

Strange IBM box: Is it first portable personal computer?

By David Needle, IW Staff

CAMBRIDGE, MA.—Did IBM manufacture a portable computer in the early 50s?

"I can't find anything on it," Rich Coyle, a spokesman for IBM, told InfoWorld. "I checked with our archives person who's been with us since the 1930s, and he can't recall anything like it. It may've been a one-shot deal," Coyle concluded.

Well, if no one at IBM remembers anything about the machine, the question remains, where did the wooden box bearing the familiar IBM insignia come from?

Educational tools

According to Norman "Bud" Napier, IBM made "several" of the devices in the late 1950s as "educational tools," designed to show how a computer worked.

Napier, who claims he was once deputy director of the MIT (Massachusetts Institute of Technology) instrumentation laboratory, said the machine had at one time belonged to former MIT president Jerome Weisner.

"When [Dr. Weisner] became presi-

See 50s portable, page 5

Libertarians call CompuServe for election results

By Deborah Wise, IW Staff

In this month's federal, state and local elections, Libertarians monitored the progress of their party's 800 candidates on a nationwide microcomputer network.

For \$30 an hour, Libertarians with personal computers and a modem could dial the Libertarian Party account on CompuServe, an information utility based in Columbus, Ohio.

As the polls closed and the counting began, Libertarian volunteers in 25 locations nationwide fed information about their candidates to the network. Others phoned in reports to the Washington, D.C., headquarters. The reports were then recorded on the

computer.

"The information is important to Libertarians and it is not always easy to get immediately. You see, the problem with third parties, in an election traditionally dominated by two parties, is that they are not covered by the media on election night," said Honey Lanham, national director of the Libertarian Party.

Before the election, more than 30 microcomputer owners had signed up for the service, she said. "We were late in planning this year and had to go on CompuServe's commercial service rather than home service. We hope to offer something less expensive next time," said Lanham. "But it was a su-

per dry run for 1984."

The service allowed subscribers to call the Libertarian Party board and search the candidate's list by name and area. A comment line at the bottom of each screen noted what was important about each race.

"People might want to know if the candidate is running against Ted Kennedy in the federal election," said Lanham.

The comment line was also used to note what percentage of the vote the Libertarian candidate had gained. Depending on individual state law, if a candidate gains a certain percentage of the total vote, it gives the party sta-

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IN FOCUS

How do you nab a crook who works at home and steals something you can't even see? "Information is invisible," says one pundit. Please turn to page 23 for the scoop on computer crime.





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Franchise

continued from page 1
you have to have software." He predicted software sales will constitute 40% to 60% of all computer store sales within two years.

Information Please will concentrate on areas that, he believes, are weak points of existing computer stores. It will pay special attention to store layout and location, advertising and promotion and customer assistance.

The Software Guild is gearing up to supply programs to Information Please. It has 450 programs under license already, and The Software Guild is redoing documentation and packaging and removing program bugs, Martin said. By the end of 1983 the

Guild will have 1500 software titles, he added.

Martin formed The Software Guild in June 1982 to provide various ser-

Stores will pay special attention to store layout, location, promotion and customer assistance.

vices and distribution outlets for software authors writing programs for homes and small businesses. Martin said the company will be distributing its programs through wholesale channels to other stores under the Soft-smith name.

For now, the major task is selecting

these programs, Martin said. "Ninety percent of the programs that come in here are rejected," he noted. "The software industry is like maple syrup. It takes 20 gallons of sap to make one gallon of syrup."

Martin is seeking feedback from customers to improve software, and he intends to connect all Information Please stores by an electronic-mail computer system to provide faster communications.

He predicted that "users' whims are going to be better heard by authors" in the future.

Martin developed the "Computer Shack" concept in the mid-1970s. He sold the concept to executives of IMSAI Manufacturing, an early personal-computer maker, in the summer of



Softsmith display for Information Please

1976.

Later he joined IMSAI and helped in the early organization and administration of ComputerLand and its first franchised retail personal-computer stores. In 1979 he established On-Line Microcenters, also a franchise-based retail chain.

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Rover

continued from page 1

The basic system without the floppy-disk drive will cost less than \$2000.

Nelson, who is developing software for the Rover I, says that when the computer is released, word-processing and spreadsheet programs will be available that run with the stringy floppy.

He says that the power requirements (small, physical size, price and interface electronics are all characteristics that convinced him and his partner Henry Fung to select the stringy-floppy technology.

"We had to overcome our own skepticism," says Nelson. "It takes longer to get to data (load a program), but the transfer rate is faster—2½ to 3 times faster than an Apple disk."

By using dual microprocessors, Nelson says the machine can carry out at least two tasks simultaneously—such as word processing and accessing an on-line data base.

In addition to the standard system, Nelson and Fung plan to offer options of single and dual floppy-disk drives, a Winchester hard disk and a CP/M card.

M.P. Computer Services of Sunnyvale, California, will be the exclusive distributor for the Rover products.

Fung, who has developed the hardware, is an electrical engineer who formerly worked with Intel Corporation and Ford Aerospace. He has designed telecommunication and color graphic terminals.

Nelson, Rover's software designer, has consulted in the development of graphics programs for Intel and VisiCorp.

50s portable

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dent of MIT) in the early 1970s, he moved out of his (suburban) house to live in the president's house on the MIT campus. [Weisner's] wife cleaned everything out of their attic (including the IBM computer) and gave it to the MIT student 'furniture-exchange' store. I spotted the box marked IBM and picked it up for \$10," he recalled.

That \$10 investment has paid off. It now claims the machine has been appraised and valued at \$50,000. It is now a part of the Napier Family Trust.

By today's standards the device barely qualifies as a computer. Inside the box are 20 vacuum tubes connected to a series of circuits, plugs and wires—a kind of miniature Eniac.

(Eniac was one of several early elec-

tronic computers based on vacuum-tube technology. These first-generation computers filled entire rooms and required enormous amounts of power to operate.)

According to Napier, the various tubes inside the box could be lit or unlit to achieve a crude on/off or "hard wire programming" effect, depending on where you plugged in the wires.

"That was one of the first 16-bit computers. That is, its entire memory was about 16 bits," joked Napier.

Weisner recollects

Doctor Weisner, who is currently president-emeritus at MIT, told *InfoWorld* he did, in fact, recall owning something similar to the machine in question.



The mysterious so-called IBM portable contained 20 vacuum tubes.

"I recall making a film back around 1960 on computers, and I remember puzzling over how I was going to demonstrate how a computer worked. I suspect I acquired [the IBM computer] at that time because I collected a lot of things from different companies back then, although none of them turned out to be anything I could use. They were all too complicated," said Weisner.

Weisner recalled his surprise several years later when he found the device in an MIT storage area along with other items belonging to him. "I don't remember how I disposed of it," he said.

Weisner was taken aback when told that the machine had been appraised at \$50,000.

Libertarians

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tus on the ballot for the next election.

"Although we didn't win any seats this time, we got ballot status in four states," said Lanham. "That means we could save the \$60,000 it costs in a pre-election drive to win a place on the ballot." Libertarians now have ballot status in 16 states.

The information from this election will be collected on CompuServe and the hard copy will be used for future

'The computers brought us closer together; they promoted a spirit of camaraderie among our party members.'

research. "The vote totals are important to us in considering our strategies for the future," Lanham said.

Lanham and her associates were pleased with the immediacy of the information-gathering process and the speed of communications via the computer network. "I think the computers helped bring us closer together. They promoted a spirit of camaraderie among the party members," said Lanham.

Lanham hopes all the voting information from the elections will be recorded on the network as soon as possible after the polls close.

Some results, however, may take up to two weeks to record because "information on the vote totals of third-party candidates is often hard to get in some states," she said. The bulletin board will be on CompuServe until the end of the month.

The party is considering opening a permanent account on CompuServe. Members could call up a central bulletin board and communicate using the mail-box function. "Potential new members could also leave their names and addresses on the system, which would help us build up our mailing list for 1984," said Lanham.

Libertarian candidates run on a platform that states less government is the best form of government in both business and personal life. In the 1980 presidential election, Libertarian candidate Ed Clark polled just under one million votes.

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VisiCorp adds VisiWord to its 'Visi' product line

By John Markoff, IW Staff
SAN JOSE, CA—"In the beginning was the Word."

At least that's the way it was in the Bible.

At VisiCorp in San Jose, California, the word has come last. The company has just announced the addition of a word processor, VisiWord, to its "Visi" series of spreadsheets, project managers, graphics utilities and communications programs.

"VisiWord is a critical product that fills what has previously been a hole in our product line," said Jerry Diamond, vice-president of VisiCorp.

VisiWord, which will be demon-

strated at COMDEX in Las Vegas, is being introduced first for the IBM Personal Computer and is intended to function as the key program in a newly integrated VisiCorp product line.

"With the introduction of VisiWord, we're acknowledging that what users want is first, market-proven products and second, increasingly integrated programs that allow them to easily perform multiple tasks," Diamond said.

VisiCorp's move to an "integrated" product line confirms a personal-computer industry trend toward offering multitasking software. Recent announcements of software such as 1-

2-3 from Lotus Development Corporation in Cambridge, Massachusetts, T/Maker III and Sequitur from Pacific Software, indicate that users can expect a new era of software that takes advantage of faster 16-bit hardware.

Although the price of VisiWord has not yet been announced, both Diamond and product manager Steve Weyl stressed that it would be priced "competitively" with word processors such as WordStar and EasyWriter.

Weyl also said that, when used in connection with VisiFile, VisiWord would have mail-merge abilities. He said a spelling checker was also under development.

In a demonstration of the new word processor at VisiCorp's headquarters in San Jose, Weyl showed how VisiWord automatically reformats text as it is entered, a feature that has not yet been adopted by other micro-computer word-processing software.

VisiWord approximates a "what-you-see-is-what-you-get" editor—it can display two windows of text on the screen simultaneously. Weyl demonstrated how it was possible to read VisiCalc data files into text files with VisiWord.

VisiWord makes extensive use of function keys and cursor-control keys on the IBM PC. The program will come with a template that will snap around the IBM PC.

The new word processor is written principally in the C language and is still undergoing what Weyl referred to as "performance tuning." It is scheduled to be available in the first quarter of 1983.

British Telecom and GTE Telenet devise Visicom for the deaf

British Telecom has launched Visicom, a deaf communications project in Great Britain similar to a U.S. service known as Deafnet. Visicom enables deaf people to communicate using data terminals and an electronic mail system from GTE Telenet.

According to John Butcher, Great Britain's under-secretary of industry, "The main purpose of the Visicom project is for deaf people to assess for themselves the relative merits of the various new facilities."

Butcher said the new system "will permit profoundly deaf people to have access to the telephone for the first time."

Visicom will test the suitability for deaf communications of new terminal technologies as well as PSS-Mail, the British electronic messaging system supplied by GTE Telenet.

As with the Deafnet project in the United States, Visicom PSS-Mail participants will use data terminals equipped with acoustic couplers or modems to access the host computer of an electronic mail system by dialing into a GTE Telenet-furnished packet-switching network. Besides individual electronic mailboxes, the Deafnet and Visicom systems include special news and information bulletin boards for the deaf.

A GTE spokesman predicted international telecommunications among the deaf would be a reality within the next year.

The Visicom and Deafnet projects are collaborative efforts between private-sector and charitable foundations. The Visicom project is funded through a British charity known as the Breakthrough Trust, dedicated to the integration of deaf and hearing people.

The Deafnet project is funded by GTE, Digital Equipment Corporation and other suppliers of terminal equipment. Deafnet is managed by Deaf Communications of Framingham, Massachusetts.

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Women workers want to influence office automation

By Jim Bartimo

BOSTON, MA—Office workers would feel less threatened by automation if they had more of a say in the selection and implementation of equipment. This was the consensus of many speakers at the International Conference on Office Work and New Technology, held here last month and sponsored by 9 to 5, the national association of working women.

what kind of word processor to buy," he said. "They are often secretaries who are begging their boss for a word processor."

Karen Nussbaum, executive director of 9 to 5, brought the office-workers' organization from a small group to a highly visible association that has become the subject of much media attention, including a Jane Fonda movie and a TV series. "Office

automation can and should be used to enhance jobs, provide opportunities for advancement of women clericals, increase productivity, provide a healthier work environment and improve our standards of living," Nussbaum said at a press conference.

But Nussbaum also said the computer age "confronts society with grave dangers that all of us should be concerned about." She continued,

"Our task is to chart a way to turn these dangers into opportunities—opportunities for social progress."

"Though manufacturers say that centralizing tasks and rationalizing jobs is a thing of the past," Nussbaum added, "the evidence remains—when clerical jobs are automated, two low-level jobs are created for every higher-level job. Millions of women work

[See Office automation, page 12](#)



Massachusetts Governor Mike Dukakis

"User participation often means just cooperation for the implementation of systems that have already been designed," said Harley Shaiken of the Massachusetts Institute of Technology. "We have to go beyond the question, 'Do we want office automation?' We have to ask, 'What kind of office automation do we want?'"

"The kind of office automation that Elisabeth Reinhardt, international marketing manager for Apple, wants is integrated automation. Defining Apple's philosophy as "Let the technology adapt to the user," Reinhardt called for office systems that are fully integrated and, therefore, easier for office workers to use.

"The industry has not realized how important the users are," she said. "We have not bridged the gap. We're halfway across the river—saying to users, 'Come—swim over to meet us halfway.'"

"We will not have ergonomic systems until we have ergonomic software," Reinhardt said. "Users don't know what they could be getting and, therefore, what they could be asking for."

Pointing out that vendors have concentrated too much on hardware speed and not enough on users' ease in executing tasks, Reinhardt said that much of computer technology is not ready for the mass market.

Another Apple executive, Lawrence Tesler of the personal office systems division, urged the predominantly female audience to go to their supervisors with ideas for office automation before the executives leave them out of the planning process. "The type of suggestions employees come up with don't eliminate jobs, they make jobs more efficient," Tesler said.

Tesler said he found the resistance to automation in evidence at the conference unusual. "People often ask me

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Women



Office automation

continued from preceding page
under these conditions, and millions more will in the future."

Lending support to the organization's cause was newly elected Massachusetts governor Michael Dukakis. (He was a Democratic nominee for the office at the time of the conference.) "We have a habit in this country of waiting until a problem hits us between the eyes," Dukakis said. "You are here to get workers and managers talking now, cooperatively and sen-

Karen Nussbaum, executive director of 9 to 5, which sponsored the international conference on office technology.

sitively, about the steps that ensure occupational health and safety in an environment that is so very different from a construction site or a factory."

Calling his state the home of three great revolutions—the American Revolution, the industrial revolution and now the high-technology revolution, Dukakis said, "Because this state is a high-technology leader, we have a special obligation to make this equipment sale."

Dukakis also said the dismantling of Reaganomics will lead to more job opportunities in the "information sector" and other work forces; that high-school education should teach every student "his or her way around a computer" and that the governors of high-tech-rich states should form an



Elisabeth Reinhardt, Apple Computer international marketing manager

alliance to "prepare our work force to function in an information society."

An example of users organizing to create automation standards in Sweden was given by Berit Westman, union representative, Stockholm branch of Svensk Televerket. Workers at that company helped to establish better conditions for people working on CRT terminals—such as frequent break periods and better lighting, she said.

Italian academician Claudio Ciborra of the Politecnico di Milano cited two forms of automation management. Comparing one form to slavery, he said some management techniques are characterized by cheap labor and low productivity.

"Bargaining with users in systems design is more expensive and takes longer," Ciborra said. "In the end, you have systems that are productive and are used."

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Special new WP package makes kids want to write

By Deborah Wise, IW Staff

NEW YORK, NY—Educational researchers have designed a software package for children to use as a writing aid. The package will be sold nationwide for less than \$60 by Broderbund Software.

The Bank Street Writer, as it is called, is the result of work carried out at the Bank Street School, an experimental education center based here, and Intentional Educations, a non-profit organization in Watertown, Massachusetts, that develops educational software.

The first package, to be released this month, runs on a 48K Apple II Plus, Atari and Commodore 64 versions will be available later.

The project was started at Bank Street School's Center for Children and Technology where, for the past two years, researchers have been studying the role of technology in children's education.

"We wanted to find out how word processing might affect kids' writing," said Karen Sheingold, director of the center.

The center reviewed currently available microcomputer word-processing packages for use in its classroom experiments but "we concluded that not one of them was good for kids," Sheingold said. The programs were oriented towards business applications and contained too many complex command structures for children to learn.

Bank Street Center, therefore, decided to develop its own word processor. The result is an easy-to-use text editor that shows command prompts on the screen at all times.

Three-fourths of the Bank Street Writer screen is outlined; this is where children enter text. Above this area is a list of possible commands and prompts.

The text appears in uppercase and lowercase characters. If the Apple does not have an expander board or a wire attachment to modify the keyboard, then the prompts at the top of the screen explain which keys to press for uppercase characters.

The program works in two major modes: editing and text entering. The Escape key switches the program from one mode to the other.

When the user is not entering text, the keys that control the cursor (J, K, L and M on an Apple computer) are highlighted at the top of the screen. If the program is in the editing mode, the program displays the editing commands on the screen.

These commands are in simple English. The Unerase command cancels the Erase command; likewise, the Move command has an Undo command, logically called Move Back. There is a Find command and a Replace command.

The Transfer menu command displays a second menu that lets you format text for printing and other non-text-editing functions.

In the text entering mode, the screen prompt tells users where to start entering text and which keys to use for deleting text.

Frank Smith, an independent consultant working for both Bank Street

Center and Intentional Educations, brought the two organizations together. Intentional provided the programming power, and a joint committee was then formed to develop the design criteria.

"The committee meetings turned up more creative ideas with the people working together than individuals could have come up with on their own," said Gene Kusniak, 23, the programmer who developed the software for Intentional while he was still a senior at Harvard University.

Adult work

Kusniak finished the first version of

the program last February. During the spring, it was tested on children at Bank Street School and at a children's camp run by Intentional.

Bank Street School will use the word processor as part of an experiment to find out whether children will revise their written work if the revision process is made simple. A group of ten- and eleven-year-old children will use the word processor for writing in class for six months, and the teachers will monitor their progress.

Although the project is in its early stages, there are already interesting hints as to what effects the computer will have, according to Midian

Kurland, a research associate at the center. For example, the children using the word processor seem to want to write more even though they can't type. They are even beginning to manipulate their sentences, Kurland said.

"The computer" can take some of the drudgery out of writing," Kurland added. "The kids feel they are doing adult work and, therefore, attach more importance to writing."

Broderbund will market the Bank Street Writer as a word processor to be used by children and parents. Revenues from sales will go both to Bank Street School and to Intentional. ■

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Manuel Rodriguez, after an early round of the Astrosmash Shootoff in Houston.

Youth smashes competition at Astrosmash, wins \$25,000

By Tom Shea, IW Staff

An 18-year-old from Stockton, California, won \$25,000 for being the best player in the nation of the Mattel Electronics' Astrosmash video game.

Manuel Rodriguez took the grand prize when he bested 72 other contestants, racking up a winning score of 835,180 points in one hour of timed play.

The showdown Astrosmash Shootoff contest took place in a hotel near the Astrodome in Houston, Texas, in September.

Rodriguez, who had never played arcade games and who didn't even own an Intellivision video-game unit until six months ago, was motivated to become an expert after seeing a TV announcement of the \$25,000 contest.

"I knew I could do it if I tried," he said. "So I went out and bought an Intellivision. I began practicing 13 to 15 hours a day. I was determined.

Astrosmash is a game cartridge for Mattel's Intellivision video-game system; it's a basic shoot-em-up space game in which a little man at the bottom of the screen shoots his laser gun at asteroids and meteors that are raining down on a planet.

Rodriguez brought the video-game unit home, hooked it to the TV and let

'I'd sit in front of the TV and play all day until 3 A.M., put it on pause, wake up at 10 in the morning and start again!'

other members of his family play with it for one day, warning them that they soon wouldn't get much chance to use it. The next day he began playing the game in earnest, at first spending only three or four hours a day in front of the TV.

Soon, however, he was putting in long days and nights in an effort to rack up a high enough score to let him qualify for the Astrosmash contest. He quit working at his father's refrigeration business so he could devote full time to video-game training. How did his father react? "He got mad a couple of times," the youth said, "but after I won the contest it was all right."

Rodriguez said that, for one three-week stretch in his March-to-September training period, "I would sit in front of the TV every day from 10 A.M. to about 3 A.M. The game has a pause button that freezes play. I'd play all day, put it on pause, and then wake up at 10 the next morning and start again."

The finals of the competition in Houston pitted Rodriguez against Charles Tappan, a 21-year-old from Elmira, New York. The final round called for two out of three games to determine a winner. During Rodriguez's spectacular first game, he bruised his thumb. His injury hurt his performance in his next game, but he still managed to win the top prize. Tappan finished second and took home \$12,500.

The Astrosmash Shootoff offered one of the highest purses for a video-game competition to date: \$100,000 in cash and prizes. Third- and fourth-place winners took home \$10,000 and those who placed fifth through eighth won \$5,000 each.

What will Rodriguez do with his prize money? "I'm going to buy a car—a new TransAm—with the works, a new radio and everything. I'll put the rest in savings and buy things for my family."

A spokesman said Mattel has no plans for future contests. ■



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'Sesame Street' creators devise discovery games for Apple II

The playful approach to learning that's been used successfully in "Sesame Street" television programs is incorporated into 16 new computer games now available from Apple Computer.

Discovery Games were developed by Children's Television Workshop (CTW), the creators of "Sesame Street," for use in the home by children aged 4 to 13. Colorful, animated characters, including the familiar Muppets, and lively sound effects encourage children to practice reading, problem solving and motor skills and to use their creative abilities. The games stimulate growth in language and

numbers skills.

The programs are an outgrowth of 50 educational games created by CTW for Sesame Place, its educational park in Langhorne, Pennsylvania. Since 1980, more than one million visitors to this "playground of the future" have played these games. A second park, which opened this summer in Dallas, Texas, also features Discovery Games on Apple computers.

Four games packages are available, each containing four games.

• Ernie's Quiz, for ages 4 to 7, includes Muppet and number-guessing games and a program that lets the

See Sesame Street, page 16

Muppets Bert and Ernie play Discovery Games on an Apple computer with their Sesame Street pals.



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Over half its subscribers use Source half the time

Is there personal computing after age 40?

"Yes" say subscribers to The Source, an electronic information and communication service used primarily by personal-computer owners.

A recent survey of Source subscribers shows their average age is 42, three years older than in 1981. In fact, 64% of subscribers are over age 35, compared to 56% last year.

"This suggests a more serious approach to videotex services and rebuts the theory that personal computing is only a hobby for young people," says Eileen Friend, who oversaw the survey.

Friend is a marketing research director for The Reader's Digest Association, which owns The Source. The survey was distributed by an independent firm to 4000 of the 22,000 subscribers to The Source, then evaluated by members of the Digest's research staff.

"There is a clear trend toward using The Source for business," according to Friend. "Twenty percent of subscribers now access The Source most often at their place of work. Fifty-three percent say they spend at least half their time on The Source for either their primary or their secondary occupation."

Friend also says that six out of ten subscribers work in fields totally unrelated to computers.

"They are very upward-bound people with exceptionally high family incomes and college educations. Their interests are quite varied, and they come from many different businesses and professions. [What] they all share [is] a common fascination with personal computing."

A new trend this year is for subscribers to form networks among their colleagues using The Source. Friend says such networks facilitate the rapid gathering and exchange of timely information.

"While the rest of us wait for the mail, this new generation of decision-makers has already received the information they need, acted on it and benefited from it," Friend says.

She notes that 86% of subscribers to The Source report having shown it to friends and co-workers; 81% say they would recommend it to others; and 51% know people who are thinking of subscribing.

"Obviously, there is a lot of recruiting and network formation going on," Friend notes.

Friend thinks current trends will continue. "More than half the subscribers say they plan to use The Source more during the coming year, primarily for their work."

Eighty percent of users report they are satisfied, and six out of ten feel they get "good" or "excellent" value for their money. ■

Sesame Street

continued from preceding page
child created a face by using game paddles to select from a variety of eyes, noses and other facial features.

- Instant Zoo, for ages 7 to 10, is a set of fast-moving games that encourage quick reactions as the child unscrambles words, spots shooting stars, names animals and matches pairs of words. A word editor lets the child or parent add words to the lists provided in the program.

- Spotlight, for ages 9 to 13, includes games that present advanced ideas, such as the way light angles when reflected off a mirror, and how to guess a three-digit number using clues.

- Mix and Match is for all ages. The package includes easy games for younger children as well as more advanced programs for other members of the family.

The programs run on 48K Apple II or Apple II Plus systems with one disk drive. A color monitor or television is recommended. Mix and Match requires the Applesoft BASIC language, and the other packages require Integer BASIC. Ernie's Quiz and Spotlight also require hand controllers. Games that do not require paddles can run in the emulation mode on an Apple III.

Each of the four Discovery Games packages is sold separately at a suggested retail price of \$30. The games are available through Apple computer dealers. ■

Zenith posts loss for second quarter of '82

Zenith Radio Corporation reported a loss for the second quarter of 1982 of \$4.1 million, or 22 cents per share, compared with net income of \$2.1 million, or 11 cents per share, in 1981. Sales in the second quarter of 1982 were \$292 million, compared with \$275 million for the 1981 period.

Profitability in the second quarter of 1982 continued to be afflicted by higher costs caused by inflation, lower selling prices for Zenith consumer-electronics products and higher interest costs. ■



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Software gift unlocks international 'Ivory Tower'

Commodore donates 656 educational programs to public domain

Commodore International has "unlocked the Ivory Tower" by donating 656 educational computer programs to the public domain.

Meticulously catalogued and recorded on 50 computer disks, the program series will be disseminated throughout the United States. Public and private educational institutions,

organizations and foundations, as well as private computerists, can access the software. All of Commodore's 800 full-line U.S. computer dealers will be supplied with a complete set for a nominal distribution charge of \$250.

Sets will also be made available to Commodore's 250 Education Re-

source Centers. Dealers and Resource Centers will be encouraged to make duplicate sets available free, or for the cost of labor and materials.

The ongoing software-development program represents an international effort of great size and scope. Those working on the project compiled more than 1000 original programs. The pro-

grams were designed by educators for use in their own classes and contributed by universities, public-school systems, private educational institutions, user clubs and Commodore staff from around the world.

The best of the programs submitted were standardized, categorized and recorded on disks. Each program was adapted to run on any of the Commodore microcomputers currently in use

Actual

The size, of course, is a dead giveaway. But don't let the size fool you. The HX-20 is not a toy. Or a glorified calculator. It's a computer.

A real computer, with 16K RAM (optionally expandable to 32K), and 32K ROM (optionally expandable to 64K), RS-232C and serial interfaces, a full-size ASCII keyboard, a built-in printer, a scrollable LCD screen, and sound generation. It uses a full, extended version of Microsoft BASIC, and has time and date string functions. A microcassette and ROM cartridge are available as options.

Viva la différence!

In fact, the only differences between the Epson HX-20 and a run-of-the-mill desktop computer are:

- 1) The HX-20 is small enough to fit inside your briefcase;
- 2) It'll run on an internal power supply for 50-plus hours, and fully recharge in less than eight;
- 3) It gives you ten separate program functions at the punch of a button;
- 4) It lets you interface with peripherals like MX Series printers for correspondence quality output, the CX-20 Acoustic Coupler for remote communications, a barcode reader for inventory control, and an audio cassette for loading and saving programs;
- 5) It lets you shut the whole unit off while preserving all programs in RAM; and, last, but far from least,
- 6) It costs roughly half as much as a standard desktop.

That ought to be enough to fire your imagination. But there's more.

The perfect traveling companion. With the Epson HX-20 and the optional RAM expansion, you'll be able to compute—actually write and manipulate programs with a 6301 microprocessor—just about anywhere. Because its nickel-cadmium batteries and a low-power, all-CMOS memory keep the HX-20 running for over 50 hours. And when you get back to the office, you can dump everything you've done into your main system. And even if you shut the HX-20 off, a low-voltage system maintains all programs you have in RAM.

Little screen, big picture.

The HX-20's unique virtual screen is the ultimate answer to the question, "How do you get a big screen in a small space?" You just show part of it at a time.



in schools, including the GBM, the PET, the SuperPET and the Commodore 64.

"Computers have revolutionized education on a truly global scale," said Jack Tramiel, Commodore's founder and chief executive. "Not only have they proved to be a highly inventive, effective and engaging tool for teaching the traditional disciplines, they are providing students with what will be the most important skill they'll need to advance in our technical age... computing."

"Commodore is committed to providing the international network for identifying and accessing superior programming. We are essentially unlocking the Ivory Tower. Why duplicate effort—the incalculable man-hours that went into creating the programs—when you can simply duplicate the programs and introduce them into the public domain?"

The laborious task of preparing the first 656 cataloged programs was achieved through the cooperative efforts of Commodore and many educa-

tional organizations, particularly in Canada.

The project was seeded in the summer of 1981 with an Ontario, Canada, government grant to several prominent educators to create a repository of educational software, employing high-school students. Commodore's Canadian company, already working on a similar project, suggested they pool their resources. The actual work began the following summer.

Throughout last summer, 100 programs from over 30 public-school

districts spent eight hours a day standardizing the raw programs. The standardized programs were then submitted to Commodore for a final accuracy check and for conversion to run on all the Commodore machines, including the new Commodore 64.

The software will receive widest distribution in the United States, Canada and Britain, because the BASIC programs are written in English, but Commodore will furnish sets to all of its international offices.

"It's the ripple effect," Tramiel observed. "Each program is being cast into the international informational network, and that's bound to make waves. It is conceivable that the efforts



Dr. Senese (left), assistant secretary of the U.S. Department of Education, with Jack Tramiel, founder of Commodore International and children of the United Nations International School, try out a Commodore computer.

of an American educator will soon be teaching New Guinea students their multiplication tables."

The 656 programs cover most subject categories. Each is identified by a topic, grade level, quality and degree of student/teacher participation. In addition to the educational programs, there are 13 administrative aids for grading, attendance and statistical analysis; 13 computer utility exercises; and 83 games.

The 13 catalog classifications include administration, business, computer science, English, French, games, geography, history, mathematics, science, technology, computer utilization and a miscellaneous category.

There are programs for pre-schoolers to university graduates, hobbyists to master computerists, students to educators. "If we've left anyone out, we'll catch them with the next 600 programs being worked on" quipped Tramiel, adding that the company plans to expand its public-domain software inventory. ■

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The HX-20's built-in 24 column dot matrix impact microprinter hands it to you at 42 LPM, in a crisp, precise 5x7 matrix. It even has bit addressable graphics to give you a pint-sized sales chart, a cartridge ribbon and a full upper and lower case ASCII character set. And enough international symbols to print most Western languages.

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When you hold an HX-20 in your hand, you're not only holding a lot of capacity, you're holding a lot of expansion.

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Desktops will exceed value of mainframes by 1986

MIS planners must change to accommodate personal computers

The dollar value of personal computers shipped in the U.S. is expected to exceed the value of mainframes shipped by 1986, according to an in-depth research study conducted by International Data Corporation (IDC).

Nearly 20 million personal computers will be installed worldwide by 1986, with an installed-base value of more than \$67 billion. This predicted base of micros represents a 58% annual compound growth rate over the 1982 installed value of \$6.8 billion for desktop computers. This figure is expected to top \$12 billion by the end of 1982.

This staggering growth, pushing desktop proliferation beyond that of mainframes, has far-reaching implications for the MIS (management information systems) departments within large organizations. Just as data processing became a fact of life for large organizations in the 1960s, stimulating the creation of the MIS department, the personal computer has become a fact of life in the office of the 1980s, requiring a similar delegation of responsibility.

Until recently, only traditional mainframes and minicomputers fell within the MIS realm. MIS staffers thus made most decisions regarding procurement, implementation and development of computer equipment for the user organization. These multimillion dollar expenditures, including maintenance, staffing and support of information systems, represented a significant percentage of overall corporate spending.

Looking ahead IDC projects that desktop-procurement expenditures will soon far outweigh traditional data-processing hardware expenses, and that desktops will be rapidly integrated into multifunctional work stations. Some MIS departments may soon face multimillion dollar acquisition and support decisions as desktops infiltrate the office.

"The prospect of thousands of personal computers within large user organizations is not unimaginable," claims IDC's Aaron Goldberg, senior research analyst for the personal-computer market. "If left to itself, the growth and proliferation of personal computers could well become an unmanageable nightmare for the MIS department. Most organizations have not yet developed a firm plan for personal-computer usage. The time is ripe, however, if the MIS department wants to get a handle on the problem before the installed population makes any attempt at control impossible."

The IDC report asserts that the crucial issue facing large organizations is assigning responsibility for personal-computer acquisition and management to a specific entity within the organization. The questions that typically arise:

- Should personal-computer man-

agement be centralized and tightly controlled by the existing MIS department?

- In a large organization with autonomous divisions, should each department be responsible for fulfilling its own desktop-computer needs?
- Should the use of personal com-

puters, which are typically low-priced stand-alone units, be governed by strict MIS policy when personal-computer users would represent an entirely new cast of characters and problems under the MIS umbrella?

With \$18.2 billion worth of worldwide desktop computer shipments projected for 1986 alone, organizations must plan to integrate desktops into the office of the 80s. ■

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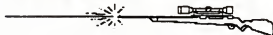
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Buck Gee, president of Software Connections, at a Corvus Concept work station

The software connection: how networked micros change offices

By John Markoff, *IV Staff*

SANTA CLARA, CA—In 1982, we've seen the advent of the first reliable, low-cost, local-area networks for personal computers.

Microcomputers have literally been brought into some corporations through the back door. To the horror and consternation of data-processing managers, individual departments have purchased micros on their own, occasionally out of funds originally reserved for office supplies.

Now, local-area networks are chang-

ing microcomputers from personal tools back into genuine organizational tools. Networked personal computers can rapidly change communication patterns in offices.

If there is a big if, however. As in many other aspects of the development of personal-computer technology, the development of local-area-network software is lagging significantly behind the physical interconnection of systems.

The potential, of course, is tremendous. Transferring files and sharing resources is merely the beginning. In the future, perhaps networks will serve as the basis for distributed operating systems that can harness the power of hundreds of computers.

The key is software. Software Connections is a Santa Clara, California, start-up company that has set out to fill this local-area-network software gap. The company was set up last December by a group of designers who formerly worked together at Hewlett-Packard.

Software Connections has begun to offer applications software for the Corvus Omninet local-area network.

"We see our niche as developing applications software not being offered by the hardware manufacturers," says Mike Hartstein, Software Connections' director of research and development.

Software Connections doesn't plan to limit its applications software to the Omninet, however. "We're looking at the IBM Personal Computer very closely," said Buck Gee, Software Connections' president.

Registered mail

The company's first two products for the Omninet are Mail Monitor and Classroom Monitor.

Mail Monitor allows Omninet to hook together Apple IIs, Corvus Concept work stations and remote users with the addition of the Hayes Stack Smartmodem.

Software Connections' Omninet, an electronic mailbox, is composed of a "central post office" program that runs on a dedicated computer and a "local mailman" program that runs on each computer in the network.

The system offers each user a screen editor to compose letters, and it allows users to attach documents and data files to each letter. Mail Monitor also allows users to send to several recipients or create predefined distribution lists.

Users can send registered mail over the net and can instruct the central-post-office program to dial another Mail Monitor post office at a predetermined time and pass letters addressed to a remote site through the telephone network.

Classroom Monitor lets the teacher enter a command to turn his or her monitor into a real-time window onto the student's display. This mode is called display sharing.

According to Gee, Classroom Monitor also lets the rest of the class watch one student, offers point-to-point messaging and lets the teacher download programs to the student's Apple. ■

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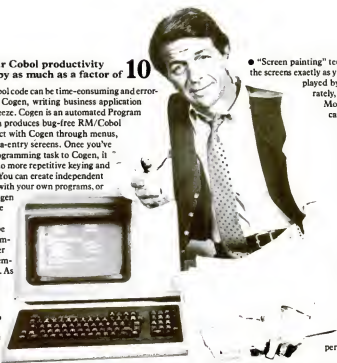
Having proved itself on minicomputers, Cogen is now available on any microcomputer which runs RM/Cobol, a widely used business language. Among the many systems under which RM/Cobol runs are IMOS, IRX, RT-11, CP/M and OS/2. Cogen will run on any RM/Cobol system. So besides improving your programming productivity, Cogen also improves your program portability by producing clean RM/Cobol code.

Some Benefits of Cogen

- Cogen generates formal, structured programs automatically, so your code is standardized, self-documenting, efficient and easy to maintain. And more important, a major source of bugs is eliminated.

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Computer crime is on the rise. The crimes aren't dramatic, but they do involve large sums of money. Often the victims keep the capers quiet for fear of encouraging repeat offenses.

Are computer crimes too costly? Are computer criminals respected rather than reviled? Dave Needle, and the law-enforcement officials he interviews, ponder these questions.

Who are the criminals? Mild-mannered, mid-level bank clerks are more likely to turn, bit by bit, to a life of crime than are wild-eyed computer-science graduate students. John Markoff recounts some of the great crimes in computer history.

How are stores preparing for the holiday season? Scott Mace tours computer stores to find out how the pros can redesign stores to foil shoplifters.

If you are a victim of computer crime, how do you (get your) byte back? John Barry writes about the *Computer Crime Digest*, a publication that gives counsel on what to do after the deed is done, and how to use computers as crime fighters.

Computer crimes: concern grows in security circles

By David Needle, IW Staff

A lot of people talk about computer crime but, in the opinion of some law-enforcement officials and other interested parties, no one seems to want to do anything about it.

"I get the feeling the general public respects the criminal who understands high tech. It's a Jesse James syndrome; they become like folk heroes," commented Jack Bologna, a veteran crime fighter with over 14 years' experience in various federal law-enforcement agencies.

Most of today's so-called computer criminals have to know more than the outlaws and gangsters of an earlier

era. Yet there is also concern among people involved in computer-security issues that "electronic thievery" has become a relatively simple affair.

"The 'sophisticated' computer crime doesn't actually require that much sophistication," according to Richard DeMillo, professor of computer science at the Georgia Institute of Technology. "Most attempts [both successful and unsuccessful] have taken an extremely naive approach," added DeMillo.

There were several successful attempts earlier this year to illegally tap into the large G.I.T. Cyber computer, which has dial-up phone access. "We

assume the students who broke in did it for fun, as a challenge, but we don't actually know what they did," commented DeMillo, who teaches a course in computer security.

DeMillo is somewhat encouraged by recent legislation passed by the Georgia State legislature that makes it a statutory offense to access a computer in an unauthorized way.

"This type of legislation is usually poorly written and naive but it's better to have some kind of law on the books than none at all," remarked DeMillo.

Stanley Mark Rifkin, a computer consultant and former college professor, pulled off one of the more famous

electronic heists back in 1979.

Rifkin made off with \$10.2 million actually perpetrating a series of transactions of less than \$1 million each! from the Security Pacific National Bank after he learned the bank's computer-access codes during a visit to the bank's wire-transfer room.

"Rifkin apparently considered a more sophisticated approach, but once he realized all he needed was the transfer codes and a telephone, he did it that way," commented DeMillo. Rifkin's own boasting of the feat eventually led to his being caught and brought to trial.

The Rifkin case is one extreme on



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the scale of crimes involving computers. Software piracy, misappropriation of trade secrets and the physical theft of computers are among the more commonplace crimes facing law-enforcement officials and the makers, sellers and owners of computers and computer-related equipment.

Computer crime poses some interesting philosophical questions, noted Loren Goldman, an ex-patrolman and now manager of operations for the International Association of Chiefs of Police.

"It's better to have a \$40,000 bank holdup with a few deaths and property damage or the \$100,000 illegal EFT [electronic-funds transfer] where no one gets hurt and no property is damaged?" asked Goldman rhetorically.

Prosecutors can have a difficult time trying such "clean crimes," according to Goldman, especially if the jury is "stacked" against them.

"It's not difficult for the defense to assemble a jury of citizens that are against high tech, people with bad credit ratings for example," surmised Goldman.

One issue Goldman thinks will become of increasing concern to local police departments is the theft of personal computers.

"If the fences [middlemen who buy and sell stolen goods] perceive there is a market for [personal computers], then they will become a hot item [to steal]."

Goldman also feels there is a direct correlation between the theft rate of a product and how heavily it is marketed. Goldman notes, for example, that Cobra CB radios were one of the most stolen and most frequently advertised CB radios during the "CB radio craze" a few years back.

"In the automobile society, cars are the key thing. In the information society, personal computers will be the key and like cars a target of thieves," concluded Goldman.

Here to stay

A growing number of high-tech companies are relying on private security forces to help in the investigation and prevention of computer-related crimes, but computer crimes are also an issue that will increasingly fall into the purview of public law-enforcement officials.

Computer-security and computer-crime problems are with us to stay," declared Bruce Goldstein, founder of a new organization called the International Association of Computer Crime Investigators (IACCI). Goldstein, who is also president of Executec, a San Francisco consulting firm specializing in computer security, told *InfoWorld* he formed IACCI to "throw a spotlight on the computer criminal."

Goldstein expects his organization to have an international membership of consultants, qualified individuals and students totaling between two and three thousand members within two years.

"We're primarily going to be an education-oriented organization," he noted.

Part of the "education" IACCI plans to provide will be profiles of potential "computer abusers" and the conditions within a company that could

lead to a so-called computer crime being committed.

One way Goldstein plans to do this is to emphasize the importance of screening new employees and of maintaining security conditions.

Education may be the most effective means of stopping computer crime before it happens. "Information has impact, just as money and personal belongings do," noted DeMillo.

Goldstein agreed with DeMillo, commenting that "computer crime is an issue that should be addressed in every single computer class."

If you want more information on the IACCI, send your request on letterhead stationery to Bruce Goldstein, Membership Director, 1100 Gough Street, Suite 8F, San Francisco, CA 94108. ■



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Computer crimes: lots of money, little ingenuity

By John Markoff, *IW Staff*

A reporter recently asked a computer scientist what his feelings were on the topic of computer crime.

The reporter knew the scientist well, and valued his technical expertise. He had also come to know the scientist as a person and had developed a deep respect for his ethical standards.

Thus, the reporter was surprised when, in the midst of their conversation, the scientist confided, "I've given it [crime by computer] a lot of thought. I think the only reason I haven't attempted it is that I haven't figured out a foolproof scheme yet."

Computer crime. Within the past five years, it has been the subject of countless newspaper and magazine articles, books, novels and, more recently, even movies.

The popular (and overworked) stereotype is of a brilliant social misfit who (A) exacts some telling revenge against a former employer by using the employer's own computer to transfer billions to a numbered Swiss bank account; (B) from a roach-ridden apartment on the Upper West Side, uses a telephone and terminal to hold a whole city hostage in some dastardly plot; or (C) plays the part of a heroic student Robin Hood late at night in the campus computer center by stealing electronically from the giant corporations and giving to the people in the ghettos.

Frustrated clerks

A look at some of the major computer crimes of the last decade suggests that rather than being wild-eyed computer-science graduate students, computer criminals are likely to be financially frustrated, middle-level bank clerks or, occasionally, programmers who can't pass up an obvious temptation.

It is, of course, possible that some of the boldest computer crimes may have gone unreported. Security experts are fond of saying that the victims of computer crime often cover up their losses for fear of admitting them publicly or opening themselves to further abuses.

Computer-security experts also point out that there is no such thing as a truly secure system. Opening any computer to remote communication raises the possibility of clandestine penetration, they say.

Yet to date, most computer crimes

have not been distinguished by any particular technological daring.

A review of the major computer-related crimes of the last decade reveals that, aside from the large sums of money involved, they are not particularly dramatic.

In what may have involved the largest sum of money in a computer-related crime, L. Ben Lewis, an operations officer for Wells Fargo Bank in California, was accused of taking \$21.3 million by opening a bogus account in one branch and then circumventing bank controls by using the bank's computerized interbranch account-settlement process to withdraw funds

from a different branch to cover his phony deposits.

In a 1978 case, and in what may be the most celebrated computer crime of the last decade, Stanley Mark Rifkin, a former computer consultant to Security Pacific Bank, obtained the bank's wire transfer code. Later, posing as a branch manager, he called from a public telephone and used the code to send \$10.3 million to a Swiss account. Had Rifkin not boasted of his feat, he might never have been caught.

The vulnerabilities of the electronic-funds-transfer system of the nation's banks are obvious. In one well-known but unsolved case in which ultimately

no money was lost, Morgan Guaranty accepted a false telex from the Central Bank of Nigeria, transferring \$21 million. Later, the money was rerouted to three other banks. It was only when a bank in California refused one of the requested transfers that an investigation began.

The Nigerian bank labeled the original telex a fraud and the funds were never collected.

Some computer-related crimes take advantage of appallingly poor security measures. Jerry Neal Schneider set up a million-dollar telephone-equipment business to run out of a Pacific Tele

See *Great crimes*, page 28

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"I know I don't have to wear a mask. I just can't pull a heist without one."

Great crimes

continued from preceding page
graph & Telephone warehouse after he broke a touch-tone equipment-ordering code. He had the items delivered to a warehouse and then picked them up after delivery, but before inventory.

Schneider was eventually tripped up by a disgruntled employee and now serves as a computer-security consultant.

One of the more frequently practiced computer crimes involves what computer-security-experts refer to as a "salami" technique of randomly slicing small amounts of money, frequently only pennies, from one account and having the bank's com-

puter move it to another account.

Another similar crime involved the chief teller at the Union Dime Bank in New York, who manipulated accounts from a remote terminal in his office. He forced the bank's computer to print out evidence that its accounts were in order, while in fact has was embezzling over a million dollars from the accounts. He would likely never have been discovered if his crime had not been uncovered when police broke up a gambling parlor at which he was a regular and began asking him where his betting money came from.

Others have made their money by changing the way the computer keeps the rules. Some years ago, a secretary at a West Coast manufacturing plant who operated a computer as part of her duties was asked by a company salesman to make a minor change in a program.

As it turned out, the secretary had altered a program that had been designed not to accept orders for the company's goods at a price below a certain minimum and enabled him to increase his commissions by making low-priced sales. The company, unfortunately, lost \$75,000 on the difference between the original minimum and what he sold the goods for.

The corporate auditor eventually stumbled across the program change while checking another sale.

Perhaps the most legendary of all computer crimes of the last decade was the equity funding scandal, in which the "daring young men" as *Fortune* magazine was later to call them created 64,000 fake identities to purchase 64,000 fake insurance policies.

Damaged files

In contrast to these computer-age embezzlement schemes, most cases involving juveniles appear to involve technological vandalism.

Several years ago, students at the private Dalton School in New York City gained access to a Canadian network of corporate-data systems. Allegedly, the students successfully broke into PepsiCo's computers, shut them down and damaged files in the process.

In another case last year, two Los Angeles "phone phreaks" broke into the computer of a San Francisco company, stole passwords and damaged files.

In neither of these cases, however, was there any direct evidence of theft.

Thus, today's computer crimes have largely been the technological equivalent of sticking hands in the till.

In the future, however, it is clearly possible to conceive of a new class of information crimes in an information-based economy.

"The global flow of software is a fascinating problem," says Michael O'Malley, president of Berkeley Systems Works, a Berkeley-based software house that specializes in software for speech technology.

"It's just information, and information is invisible," he adds.

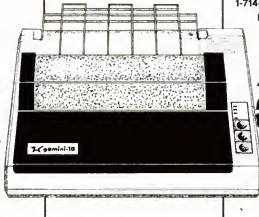
O'Malley notes that the line between computer software and hardware is becoming less clear. He points out that the design patterns for semiconductor chips are now routinely transmitted over computer networks, rendering traditional security techniques obsolete. ■

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Congress suggests all law-enforcing bodies link up by computer

Although the Reagan administration decries federal bureaucracy, a recent congressional study indicates that additional bureaucracy in the form of a computer network controlled by the federal government could help fight crime.

The study, by Congress' Office of Technology Assessment, points out that computer technology can substantially improve the organization and dissemination of criminal-history information.

Representative Don Edwards, D-California, an ex-FBI agent who is chairman of the House Judiciary Committee's civil- and constitutional-rights subcommittee, requested the study.

He wanted to ascertain the possibility of doing away with "duplication" in keeping and transferring information between city, state and federal law-enforcement organizations.

Edwards acknowledges, and the report points out, that precautions will have to be taken to protect privacy and ensure that information is dispensed only as permitted by law. He believes that network safeguards could be developed.

The study's coordinator, Fred Wood, points out that it will not be simple to clear up all potential misuses of such a network that could infringe on "constitutional rights of people affected by the system."

One solution, he suggests, is careful regulation of the system. "The federal legislative route to make the regulations may be the most effective route to resolve the conflict," he says.

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Inside theft, outside shoplifting force stores to tighten security

By Scott Mace, IW Staff

It will raise the cost of the software you buy, and make it more difficult for you to preview or return that software. It is theft in computer stores, and it is growing.

Theft is so much of a problem that at least one computer store has gone out of business because of it, and according to one observer, many store owners will be horrified after Christmas to find out how much software and hardware they are missing.

Stores are trying many different tactics to foil theft by customers and also internal theft by computer-store employees. In some instances these security measures have a price: they deny customers access to packages for demonstration purposes, and sometimes force employees to take polygraph (lie-detector) tests to prove their innocence.

The stores we contacted have no hard statistics as to how much software and hardware have been stolen, but observers estimate the pilferage could be up to 3% of store profits; the actual figures could be much higher.

The amount of theft at computer stores depends upon the way the store is run and what kind of software and hardware is sold there, according to Seymour Merrin, president of the Association of Better Computer Dealers, a group of 22 computer-store owners in New York and surrounding states.

"The potential is really there for software pilfering," according to Mike Bell of On-Line Microcenters, "especially of costly programs."

Merrin noted that employee theft is as much of a problem as shoplifting by customers. Strict inventory-control procedures are commencing at many stores, and many stockrooms are now under lock and key. Store supervisors "have even begun to check the trash bins outside the store" to see if an employee has dumped a piece of hardware there for later pickup, Merrin added.

Lie-detector test

One ComputerLand owner who did not wish to be identified said the store discovered a "six-figure loss" in hardware when the books were examined in January 1982. The owner attributed the loss to employee theft but no suspects were apprehended and the merchandise is still missing.

This owner now considers theft "a cost of doing business" and expects to lose software and hardware in the tens of thousands of dollars per year, no matter what he does.

Steve Switzer, owner of the two Electronic Fantasy video and computer stores in California, said he has had little problem with internal theft and attributes this to good relations with his ten employees. Still, he lets them know in no uncertain terms, when they are hired, that he could require them to take a lie-detector test if an employee theft occurs.

Despite this, Switzer said he recently lost an Atari 800 and a VCS video-game system, which were car-

ried off by an employee who is no longer with the firm. He did not recover the systems.

Switzer notes that employees working with computer hardware and software forget how much the products are worth. "They end up handling so much of it in our stores and service areas that everybody gets lax."

Switzer sometimes has to remind an

[See Stores, page 32](#)

On-Line Microcomputer Center in Walnut Creek, California, uses railings to redirect traffic and reduce shoplifting.



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Stores

continued from preceding page
employee who is about to go on a break to take a computer off the counter after a customer brings it in for servicing. Employee awareness is the key, and even owners have to remind themselves every now and then, Switzer added.

Things weren't always this way, many observers noted. A few years ago, \$1500 software packages were rare. Today, the temptation to reach out and grab that much software is greater. Despite this, games are still the most-stolen item, and several store owners blame this on the game clientele—teenagers and younger kids. Some stores simply no longer dis-

play any games software where it can be grabbed.

Robert Ponzetti is vice-president and general manager of Information Please, a new software-store-franchising company about to be launched in California (see page 1). Ponzetti held the same title with Vidiom, a computer- and video-store chain, and he sees the theft problem becoming severe.

Ponzetti said security is "of paramount interest" to information Please. "One has to be concerned or people will walk off with the stuff," he said. "Computer software is as stealable as anything else." Ponzetti said the problems and solutions of software theft are similar to those in record and video-game stores.

According to Merrin, "the tricks used to steal software are many. A common one is to take the disk while looking at the documentation."

Another tactic is to look at two or three packages in comparison at once, move the most expensive package's disk into the least expensive package's binder, then purchase the cheap package. The thief is deprived of the proper documentation, but some do it anyway. Merrin has stopped allowing customers to look at more than one package at once.

Three methods of preventing software theft, Ponzetti said, are to lock it all up, remove disks or ROMs from display copies (leaving just the documentation) and maintain "a vigorous store staff." Removing disks is

"not the ultimate solution," he said. "A Radio Shack Computer Center manager, who also asked not to be identified, said he noticed some missing diskettes when he started at the store a few weeks ago. This manager said he noticed some thefts going on at the last Computer Center he worked at, and he added he had heard stories of internal theft at other Computer Centers. Games and hobbyist-type applications were most often pinched by customers."

Why do customers and users steal from computer stores? According to Merrin, "the vast majority of kids and

Software retailers, like record retailers, will grant refunds only for unopened or defective products.

hobbyists resent not being able to make a copy of someone's software," and this prompts some of them to steal it.

Merrin said his own computer store, Computerworks of Westport, Connecticut, has been "very lucky to be in an area where theft is relatively low." Merrin is now pulling the disks from dBASE II binders after he lost an entire package. He estimated his store's loss at 15% of profits; other stores are more typically 2% to 3%.

"In the tight-cash-flow industry we are in, with its almost absurd prices, anything that takes from the bottom line is disastrous," Merrin said.

In one instance Merrin knows of, a store has even gone broke due to theft. "He didn't know it was a problem until it was too late," Merrin said. He predicted this Christmas season would produce a few more stores crippled by theft. "Some people are going to be horribly shocked," he said.

Also considered part of the theft problem by stores is the growth of users who buy a package, take it home to make a copy of it and try to return the package for a refund.

Ponzetti believes the software industry will follow the record industry's lead by granting refunds or exchanges only for defective products and unopened packages. Some stores will continue to use exchange policies as a sales tool, though.

The most important thing, Ponzetti adds, is for the store to make its return policy clear—exchanges, no exchanges, or something in between—when the customer buys the package. "The customers can get used to that," he said. "They understand."

One gray area still to be dealt with is software received as a gift, certain to happen often this Christmas season. Ponzetti predicts return policies will be liberalized right after Christmas for a while to accommodate those who bring in gifts for exchange or refund. Another alternative would be for computer stores to sell gift certificates before Christmas.

Mike Bell, architect of the revamped On-Line Microcomputer Center corporation, is trying to prevent theft by building stores where internal and external theft is physically difficult.

"I always design the store room as a
[See Stores, page 33](#)

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Editorial

Geek gallery forms our kludge

There is a staff member at *InfoWorld* who amuses himself by saying, "It's a kludge," followed by five minutes of laughing. This usually occurs after some hapless vendor has come into the offices to demonstrate his wicket.

Those of us involved in the micro business become pretty jaded. We see dozens of word processors, spreadsheet programs, disassemblers, compilers and programs, programs and more programs. This software freshest consisting of everything from quality to junk clearly reflects the range of screwball personalities that have invaded the business. Most are in it for the money.

On one wall at *InfoWorld* our editor has taken it upon himself to post any and all publicity photos of people's heads. Typically the photo is accompanied by a useless press release. The press release says that So-and-So has been promoted from assistant finance manager to associate vice-president in charge of special projects.

Obviously some egos are soothed by this waste of paper and film. The most popular photo measures 4 x 5 inches followed by 5 x 7 inches, but some companies send huge 8 x 10 glossies of some miff-headed guy who obviously is straining to produce a natural smile.

Curiously, some executives have given up smiling. Their photos look as though they were posed in a coffin. A few photos look like pictures of corpses and some staffers think that many of these people are actually studied.

Whatever the case, there is an interesting trend developing photo-wise that seems to reflect changes in the micro community as a whole.

If we use these photos as a guide to the microcomputer world, we discover that there are three distinct categories of people involved in technology.

The first type is the pitchman, the P.T. Barnum of micros. He glows in the photograph. He has a big smile and looks as if he want to shake your hand (vigorously). You can imagine him slapping you on the back at every opportunity. He usually has his teeth capped.

His contribution to technology is nil, but he serves the useful purpose of smiling a lot and pretending to like you. This keeps the more productive people from getting depressed.

The second type is the "bean counter"—the uncreative bookkeeper that enters the scene to tell everyone what they are doing wrong. You can spot the bean counter in the photographs from the telltale visorline across his forehead. These types usually have their photo taken by the cheapest guy they can find and submit what looks like a high-school-yearbook pose. The person is posed with his head painfully twisted in some peculiar angle.

The last type is the young go-getter. He looks like a chipmunk, a stereotypical fraternity preppie or a male cheerleader. He usually develops into the P.T. Barnum type.

Among the photos are pictures of guys with ferretlike rat faces or beady eyes. Some wear glasses or sport a stylish mustache. A couple of photos have subjects wearing dark sunglasses—they make a person look like a crook. One recently received photo looks as though the FBI took it with a telephoto lens. The guy in that photo was wearing sunglasses, too.

About now, you might ask what is the point of this diatribe? It is this: Looking at the large photo montage, we can all see three types of people, but unfortunately we notice that some people are missing from our geek wall. Where are the real creative types that start companies and the bright guys in the back room that make the product work?

We never get any publicity photos of Joe the systems programmer. Instead we get photos of company controllers. We never get any photos of Debbie the technician—the one who fixed the bug that was costing the company a fortune in service calls. Instead we get photos of company sales managers.

Why is this? Hasn't anyone figured out that nobody wants or uses these photos? Our anonymous staffer looks at the wall and says, "It's a kludge!" He laughs and laughs.—J.C.D.

Letters to the Editor

SuperSoft Ada lacks some features

Your reviewer missed some important details concerning SuperSoftAda (October 11, 1982).

According to a recent telephone conversation with SuperSoft technical staffer Michael Pagels, SuperSoft's compiler does not support packages, separate compilation, overloading, concurrency or fixed-point math. He was not certain about generics. These crucial features of Ada are all that distinguish it from a disguised Pascal.

True, the formal definition of Ada is not frozen, but each of SuperSoft's missing features is already available in some other Ada compiler. The 1982 revised manual is now out, and it only modifies technical details of the language.

The SuperSoft compiler is admirably tiny and fast. So were other compilers before they provided separate compilation and overloading! I worked on Telesoft's compiler last year, when we found it necessary to increase memory requirements from 64K to 256K as those features were added.

Pagels made some very interesting claims. He identified himself as an early UCSD Pascal designer, although the early project members don't remember him. He also quoted a target date of spring 1983 for his full Ada. Considering the amount of work ahead, I conclude that he and his staff are either extraordinarily talented or extremely naive.

Actually, I wish them luck. We would all like to see an efficient, inexpensive Ada compiler. SuperSoft's product may be well designed, easy to use and great fun, but I have serious doubts that it will ever be real Ada.

Bob Hofkin, Ph.D.
La Jolla, CA

Commercial Forth

As a commercial user of Forth, I was especially interested in your recent series "Forth Dimensions." The articles presented an interesting variety of information and viewpoints on Forth.

Micro Applications Group (MAG) has recently completed two major business-software products developed in Forth, a data-entry package and a sort utility. This was done under contract to Olivetti for its new Z8000-based M20 personal computer. Olivetti and Olivort, as the products are to be known, will be released before the end of the year.

The choice of Forth as the development language was based on several factors: compactness—a lot of features had to be fit into the M20's minimum configuration; speed of execution—performance requirements were close to that of assembler; speed of development—Olivetti's deadlines did not allow for use of assembly language; and ease of development—full-screen editing and interactive operation were key factors. We did have one problem to overcome: there was no version of Forth for

the PCOS operating system Olivetti had developed for its M20. So we developed our own (based on a version available from Inner Access of Belmont, California) and called it MAG/forth.

MAG/forth is unique in that it interfaces directly with the PCOS operating system and data-file structure. It also interfaces to our file-indexing system MAG/sam, which Olivetti is offering as its standard ISAM. A full-screen editor, Z8000 assembler and Forth compiler are included, and a metacompiler is also available. We will be offering MAG/forth directly to interested software developers.

In retrospect, we feel Forth was the right language for the job. It has enabled us to supply Olivetti with professional products in a timely and cost-effective manner. We thus feel comfortable in adding Forth to our list of languages we use for commercial development.

Gregg Scott, President
Micro Applications Group
Canoga Park, CA

Forth possibilities

As a Forth enthusiast, I enjoyed your October 11 issue devoted to Forth.

In the editorial, though, the phrase "Human beings do not comfortably reason in reverse Polish notation" is the most dogmatic I've seen in a long time. I'm sure in Roman times the same sort of statement would have been made about Arabic numerals. People are comfortable with whatever method they are taught to use, whether it is reading left to right or top to bottom, using Roman or Arabic numerals, or algebraic or reverse Polish notation.

The sample program in Forth of the game of Life was simply appalling. While I presume the program works, the author chose to make the coding of it unreadable. No comments, short arbitrary definition names, no formatting of the listing. This example did not extend the language to create useful programming commands but did greatly to create a program that is undecipherable!

While the syntax was correct, the methodology was poor. FIG-Forth allows verb names to be up to 31 letters long. Why did the programmer use only one letter more than most BASICs allow for variable names? Instead of 'LGL' the author should have used 'LE-GAL'; that was its function as described in the article. If it becomes more readable, it becomes easier to use and can become a standard verb in the vocabulary for use in other similar situations.

A point that seems to be missing in articles about Forth, and what I really like about the language, is that it allows for experimentation in program commands. Most languages are cast in concrete by the time the public gets to use them.

BASIC is a good example of a language that is fundamentally fixed. It has different implementations, and everyone complains about incompati-



application themselves with formal programmer intervention only at the most complex levels.

This allows dramatic increases in programmer productivity and a general improvement in data-processing throughput. This same flexibility also allows you to change or upgrade your equipment without the added cost of acquiring or writing entirely new software.

David R. Schold
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San Jose, CA

Mystery company

I would like to thank *InfoWorld* and Roger Fennema for the detailed write-up of our software in the October 11 "Break for Arcadians" section. Unfortunately, the article fails to mention the company that developed these games and what systems they run on! Please allow me to identify this "mystery company."

The games described, Y-Wing Fighter, Space Odyssey I and Galactic Warrior, are from Eryvrae, P.O. Box 68082, Sunnyvale, CA 94088. Our software runs on the Heath H-89 and H-8-H-19, and the Zenith Z-89, Z-90 and Z-100 systems.

Joe Gargulo
Eryvrae
Sunnyvale, CA 94088

Eight-bit lives

The announcement of the Z-80H in the October 18 issue was indeed good news to those of us who don't wish to scrap all our 8-bit software to get more speed (although it's not immediately obvious how a simple doubling of clock rate could lead to "four to six times" the performance of a 4-MHz part).

I wonder, though, why you've apparently never mentioned the Z-800 family of microprocessors that Zilog has been talking about for over a year now. These new chips are supposed to be 100% compatible with existing Z80 software, with an expanded instruction set and internally pipelined architecture for a claimed 300-500% improvement in throughput. They're also alleged to include an on-chip memory-management unit that allows access to half a megabyte of memory.

Imagine one of these in a low-cost desktop machine running something like Concurrent CP/M-80 (which I just invented). The user could have up to eight "virtual" 64K CP/M systems all running at the same time, each with performance approximating that of a dedicated single-task Z80.

Rob Lewis
Studio City, CA

Viewpoints or letters to the editor are welcome. Please print or type double-spaced ruminations, and send them to:
Letters to the Editor
InfoWorld
530 Lytton Avenue, #303
Palo Alto, CA 94301

Viewpoint

Computers: moral menace?

By Paul C. Conover

I've noted with great interest Alan Stein's Cutting Edge column entitled "Micros vs. the Moral Majority." Mr. Stein's concerns about the New Right movement are valid.

Some months ago, I caught the tail end of a radio interview whose guest was a prominent clerical figure involved with the moral majority. The topic was abortion—a hot issue, because the end result of a successful campaign against abortion will be the wholesale reduction of constitutional rights in America.

As time ran out, the host asked his guest about his movement's other concerns. As long as I live, I'll never forget the chill that gripped my spine when he said, "We're against the women's rights movement and are very concerned about the growing menace of home computers."

That's what the man said, folks. The menace of home computers. Stein's hypothesis is fact. The dogs already bark at our heels.

Stein failed, however, to examine a critical issue in his essay on children and computers. Computers are something over which a child can gain complete mastery, so the learning of other valuable adult skills might be set aside. To be sure, children need to grow secure in themselves, to develop the self-esteem that comes from doing a "grown-up" thing well.

Yet, at the same time, children must not be permitted to bypass normal social skills at the expense of learning to control their personal computers.

This is analogous to the "too much television" problem. The crop of computer nerds we currently have on our hands is a result of their early, childhood propensity to "deal only with something they could control."

My three-year-old daughter, Ann, is growing up in a household with three computers. She is learning to play with, and learn from, one of them (my Apple). Annie will mature in a world where computers are commonplace. This won't happen at the expense of her learning difficult "adult" skills and graces.

One final point. The moral majority is not a majority. (Some say it is neither.) The use of their media-inspired moniker in the title of Stein's column plays into their hands. Sure, it's a well-known phrase. Everybody understands immediately what is being addressed. That is the very reason it's a mistake to use it, however. This cabal of dedicated, self-proclaimed "fundamentalist Christians" whose numbers represent a tiny portion of the American public has a superb sense of media control and public perceptions.

The term *moral majority* implies that they speak for most Americans. This is simply not true. What's more, only their most rabid member believes otherwise.

The perception these Bible-thumpers create in the mind of the public is vitally important to their crusade. Why else would these old-fashioned "traditionalists" invest staggering amounts of money in the latest high-technology video production, transmission and data-processing/list-management equipment if not to influence the public's perception?

If serious writers such as Alan Stein don't think twice about using the term "moral majority," perhaps an Orwellian nightmare is at hand. It's not Big Brother I'm worried about, it's Biggest Brother and His jihad against our computers.

What will happen if we can only use THE WORD processor? You miss a keystroke, and it won't be a stoning for a syntax error. It'll be the pillar of salt.

Paul C. Conover is the president of Praxsys Communications Company in Sudbury, Massachusetts. He cofounded the Boston-based Computer Store chain, writes a Dealer Views column for Computer Dealer and attends receptions at COMDEX conventions.

lities between dialects.

Forth allows you to create verbs that bridge the gap between its different dialects, and transportability of Forth programs is less of a problem. More importantly, Forth allows for experimentation in the structures and instructions we will need in the future to solve our programming problems.

John Couch of Apple Computer has spoken on Datagramming, the programming of data bases. He says we know how to do addition and subtraction operations on single numbers, but we do not yet know how to add or subtract data bases.

Forth, with its inherent ability to define new data types and instructions, will give us the tool to develop the next step in computer operations.

Forth is not the be-all-end-all language, but it has the roots for developing the next step on a long road to that.

Forth is not for the computer scientist only; the average user can grasp the use of the words ON and OFF without needing to understand the programming that went on behind the scenes. When basic components of any application can be reduced to single terms, as they can be in Forth, they can be employed in a "natural" fashion. This is what programming is for and about, the wielding of computers to aid our modern existence.

Curt Rostenbach
Waukegan, IL

MicroMUMPS has other uses

Your article on MicroMUMPS in *Medicine* (September 20, 1982), neglected to mention MUMPS as an ideal commercial application language. We have been programming applications in MUMPS for six months now, and the programmer productivity improvement is impressive. The combined operating system/application language feature translates into high flexibility, simplicity and speed of execution with very low overhead.

Since most commercial data processing is essentially a problem of storing, correlating and retrieving from masses of information, the inherent data-base capability developed for medical applications is ideally suited for business.

More than most software on the market today, MUMPS allows, indeed demands, heavy user involvement in the analysis and programming process. With minimal training, it is possible for users to write up to 90% of their

Local-school support for micros is alive and growing

I'm hoping that the plea "Give the Teachers Money for Micros" (Newpoint, August 2, 1982) goes unanswered, at least for a while.

My foot-dragging is not based on a mistrust of machines, or a low opinion of educators, or mean feelings toward school children. Rather, it is based on some first-hand witnessing of how poorly the hysteria about the new technology serves the purposes of education.

In the first place, there is no accurate census of micros in the schools to support the contention that we have a "micro gap" crisis on our hands. Most micro census estimates tend to under-

derestimate the numbers of machines now in school buildings.

My informal estimates, based on direct contact with school staffs of a six-county region of New Jersey, suggest that no less than 75% of the secondary schools and up to 35% of the elementary schools have one or more microcomputers in their buildings.

Few of these machines cost less than \$500, and at least 25% of the 131 districts of the region have six or more machines. One district, in fact, has hard-disk/networking in each of three buildings.

If micro census data is unreliable, specific information about the ways

that schools are using microcomputers is almost nonexistent.

It is not uncommon for schools to closet the micros for a major portion of the school day and air them only at appointed times, and then, only for the gifted and talented students.

Although some educational writers and software reviewers can grasp the distinction between the computer as a learning tool, this knowledge has been slow to filter down to the schools. Many school computer coordinators still seem to believe that "Dr. Dull's Necessary Math Drills" represents the state of the art in educational com-

puter applications.

If these growing pains are fairly widespread, they do not represent the full picture of educational microcomputing. An encouraging number of local applications of the microcomputer suggest that local districts have passed quickly through the early stages of computing development and are rapidly maturing.

For example, many educators are signing up for free or inexpensive computer courses at retail stores, adult evening programs and colleges.

Furthermore, individual teachers, principals and superintendents who take a personal interest in micros do spend the time (and even a bit of non-public money) to develop their computing skills.

Many districts have gone a step further by sponsoring local training and providing funds and/or release time for educators to attend computer courses. This training often develops micro missionaries who serve as catalysts and turn-key resources to develop local school uses of microcomputers.

Moreover, teachers interested in the micro still explore inexpensive computer teaching aids, such as programmable toy vehicles or cardboard computers, to build student understanding of computer function.

Random events

Additionally, teacher-parent partnerships in several schools oversee their own after-school computer clubs or classes and some sponsor their own equipment and instructors.

Finally, at one regional high school, a math teacher has taught his students enough BASIC to have them begin applications projects for the school's administrative operations.

These encouraging events are random and, to a large extent, unpublished. They are largely the result of personal rather than institutional initiative, and they are happening without the use of external carrots or sticks from federal or state governments.

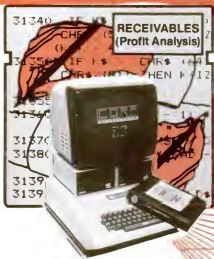
Although we might become a bit impatient at the speed of this growth, it often seems paced to suit local needs and interest. More importantly, we should not ignore and devalue the work that has been done by educators, by assuming that microcomputing is dormant or inadequate.

Important as the microcomputer equipment may become in this process, it has been only recently that an affordable "low end" market for machines has begun to form. Until we can exploit the potential of these cheaper machines, it seems shortsighted and wasteful to suggest that the issue is a hardware problem.

Exhortations to buy microcomputers are seldom accompanied by any practical plan for applications. It would be more helpful if those who are discouraged about the pace of computing literacy took some time to find out what our local schools are doing, and then rolled up their sleeves to provide some active local support to help schools along the way.

Richard O. Titus
Voorhees, NJ

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Canadian suggests ways to minimize import taxes

I am writing in response to the Viewpoint "Can't Canada not can micros?" by George W. Sherouse, which appeared in your issue of September 13, 1982.

The impact of exchange-rate differences and the burden imposed by Canadian duty and sales tax upon imported microcomputer equipment is, indeed, substantial, however, it is not quite as bad as Mr. Sherouse suggests.

I recently moved back to Canada with a microcomputer, matrix printer, modem and software that were subject to duty because I had purchased them within six months prior to my move. Through my inquiries, I learned the following information about applicable customs charges.

Hardware and software imported into Canada are subjected to two kinds of tax by the Government of Canada. The first is a 6.3% customs duty. The second is a 9% federal sales tax. Some kinds of microcomputer equipment are exempt from the 6.3% duty, however, all kinds of hardware and software are subject to the 9% tax. (Let me emphasize that these charges are calculated with respect to the Canadian-dollar value of the item in question.)

The general tariff explanation that imposes the 6.3% duty and the 9% sales tax on "electronic data processing machines" and peripherals is item 41417-1.

In the book of customs and excise regulations, the item that exempts certain components and peripherals from the duty (but not the sales tax) is item 41417-2.

Exempted items of particular interest to microcomputer users include "disc (sic) packs; disc drives; disc files; disc cartridge cleaners;...line printers and page writers;...matrix printers including buffered printers." The customs officers with whom I dealt were prepared to equate diskettes with "disc packs" and software with "disc files."

Thus, if you are planning to import computer equipment into Canada, you can minimize your payments to the federal government by taking a number of precautions. First, you should be sure to obtain a separate quotation from your dealer for the disk drives of any computer you purchase, even if they are integrated with the CPU and CRT. If you do this, you should only have to pay the 9% tax on the disk drives, as opposed to a total of 15.3% on the rest of the computer.

Similarly, you should get the dealer to specify that your matrix printer is a printer of this kind on the invoice that sets out the price. (Customs officers love invoices as proof of value.) In the case of software, you should ask the seller to characterize it as a "disk file on disk pack" on the purchase documents.

I must emphasize, however, that tariff items of this sort can change on short notice. A change of this kind may explain the difference between the 35% duty figure Mr. Sherouse mentioned and the combined 15.3% for duty and tax that was in force at the time when I imported my computer. Therefore, it is a good idea to check rates and procedures with your local customs offi-

cials before you make arrangements to import computer equipment.

The ones I had to deal with were courteous and helpful. If possible, find an officer who is familiar with computer equipment, in order to avoid unnecessary arguments over technical issues, e.g., the characteristics of software and diskettes.

Canadians who choose to import microcomputers to Canada do not face as severe a burden as Mr. Sherouse's Viewpoint suggests. The remaining charges can still have a severe impact, though. I paid a total of \$948 (Canadian) in duty and tax to import a North Star Advantage, Prism

Printer, a modem and related software, even after taking all the precautions I have described.

The fact that some kinds of equipment are subject to the 6.3% customs duty while others are not indicates, I believe, that the Government of Canada is trying to encourage the importation of computer equipment that Canada is not producing while, at the same time, providing some protection in those areas where a Canadian microcomputer industry is developing.

Efforts to encourage the production of microcomputers, peripherals and software in Canada are clearly legitimate. Any country that does not de-

velop an indigenous industry of this kind is likely to suffer economically in comparison to other countries that succeed in entering the computer field. Whether customs duties are the best way of accomplishing this objective is, of course, a different matter.

Governments can encourage the development of important industries through positive incentives, as well as by imposing duties as a means of protection. The Government of Canada has in fact adopted the former approach as well. It has aided in the development of Teledom (Canada's videotext industry) and funded mi-

See Canada, page 38

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Random Access/John Unger Zussman

Make computers 'people-literate'

Would you buy a stereo if you had to pass a "music literacy test" to do so? In effect, that's what the computer professionals among us require of computer users when we sell them equipment that takes specialized knowledge to operate.

Last week I argued that "computer literacy," as we commonly speak of it in the computer industry, is a cop-out. We have been using this myth to justify our failure to provide hardware and software that is as easy to use as a record player. We need computers that act as if they know something about people. Instead of training people to be computer-literate, we need to train our computers to be people-literate.

Thus, I once suggested to Ramon Zamora, founder of the Innovative computer-literacy project ComputerTown USA!, that we need a new organization—PeopleTown USA! Computers would come to PeopleTown to learn how to interact with everyday, ordinary, nontechnical humans.

This goal is mainly a matter of communication and, needless to say, it's not easy. The fact is that computers are technical, complex products, and people require highly specialized knowledge to build and maintain them. We are faced with the task of bundling up all this complexity and presenting it to users so that it looks—and is—simple.

'Auto literacy'

Our experience with other technical products is instructive. Early automobiles were more difficult to operate than today's cars. They required a certain level of "automobile-literacy"—like knowing how to crank an engine. Electric cranking was a complex technical addition, but it made cars much simpler to use.

Similarly, cassette tape decks represent a major user breakthrough over the reel-to-reel recorders that were common 15 years ago. If you look closely at a cassette tape or deck, you'll understand that it wasn't a trivial engineering accomplishment, but it vastly simplified the user's effort by eliminating the need to thread the tape. Today's proliferation of tape decks was largely made possible by the cassette.

The lesson is clear: technical consumer products need to be so complex that they're simple. They need to be sophisticated enough to hide their complexity from users, and they must communicate clearly and simply what users have to do.

Describing how to achieve such advances is clearly beyond the scope of this column—or any column. The topic is more suitable for a book, or several, such as Paul Heckel's *Designing Software for People*, which was recently serialized in *InfoWorld*.

In fact, as a result of pioneers such as Heckel and Mitch Kapor, who designed an innovative, well-copied menu interface for VisiPlot, we are now making major progress toward people-literate computers. Many programs now incorporate menus, English-language prompts and help screens, all of which make programs less demanding of users.

Still, we can do a great deal more to make our computers people-literate. If I were designing a curriculum for PeopleTown USA!, it would include three major courses of study:

1. **Remedial usability.** Despite our recent advances in usability, most programs are still designed with little consideration for users. For example, consider a time-and-billing program aimed at nontechnical professionals such as attorneys, accountants and consultants. To start the program, the manual says:

Turn on the computer and press '5'. The computer will display the message "MEMORY SIZE?" Press 'ESC' and 'N' and the computer will respond.

There is clearly a communication problem here. The prescribed interaction between computer and user is like a conversation between two schizophrenics who have only dim knowledge of the other's presence. Users have the right to expect that the procedures for operating the computer will be reasonable and direct, and that the computer's messages will be relevant.

They should not have to communicate in an arbitrary code of keystrokes and prompts. Starting this program is like hand-cranking an automobile.

Similarly, MicroPlan, a major financial-modeling program, is advertised as being "designed specifically

for business." With over 130 commands, which can be listed on one side of the screen, it has a great deal of power. Yet users are required to interact with the program by entering the *command number*. You can use the HELP command to display information about any other command—provided you supply the *command number*. In other words, on-line help is available only for users who already know the *command structure*.

2. **Advanced communications workshop.** The basic usability that has been achieved in the last few years is only the first step. We have a long way to go. For example, VisiCalc and WordStar, Heckel's primary examples of well-designed programs, are fairly easy to use but require several hours of dedicated study to learn. Few programs exploit the communication potential inherent in color, graphics or sound.

We need to examine every message, every command, every interaction to see how it can be clarified, streamlined and fit into the user's perspective.

Backup procedures are a good example, and I'd devote an entire PeopleTown course to them. We know that users are rarely diligent about backing up their data. (Perhaps they have been led to put undue trust in computers, disks, programs and power companies.) In any case, it makes sense to help them out.

I cut my word-processing teeth on Magic Wand, which has since been revised and renamed PeachText. Whenever you save a Magic Wand text file, it automatically keeps the previous version as a backup copy. In my mind, this feature is sufficient to nominate the program for sainthood. If your

main file is inadvertently destroyed or damaged, you can recover from the point of your last save, not from scratch.

On the other hand, at least in the incarnations I used, Magic Wand didn't encourage users to save their work regularly. To do so you had to exit from the program and return to CP/M and then reenter the program and re-load the file. This process interrupts a writer's train of thought and presents the constant temptation to "edit one more paragraph" before you save the

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Canada

continued from preceding page
croelectronics centers to provide technical assistance to industries that are planning to computerize.

On the other hand, the American computer industry is already so highly developed that there is some question whether fledgling Canadian competitors stand much chance of success unless they are protected in their infancy.

There are no easy answers to these questions. They will have to be resolved by a tripartite debate among computer users, producers and the Canadian government.

In the meantime, users will simply have to make informed choices when

deciding whether or not their need for a particular item of American hardware or software is worth paying the customs charges. In many cases, lower American prices, or the unavailability of a similar product in Canada, may favor an American purchase, even in the face of additional sales tax and duty.

In such a situation, we users will have to grin and bear these taxes and hope that, at least, we are contributing toward the development of an abundant supply of Canadian-produced microcomputers and software at some point in the future.

Jennifer K. Banker
Halifax, Nova Scotia
Canada

file.

The backup copy is always there—but if the computer fails and you haven't saved your work recently, it can be unpleasant to bring it up to date. The QUNIX text editor that I use now has an automatic-save feature that you can set to save a backup file every time you enter 20 new lines.

In addition, Magic Wand saves your backup file on the same disk as the original. It's of no help if the disk itself is damaged, and like most programs, Magic Wand does little to encourage

users to back up their disks. Several business programs from Dakin5 solve this problem by requiring users to back up their disks regularly. The procedures are written into the program and the backup disks are included.

3. **Human engineering for hardware.** Although, at first glance, people-literacy seems like a software problem, it involves hardware as well. It should be—but generally isn't—easy for users to set up, connect and get service for their computers.

They shouldn't have to make up

their own cables or write their own device drivers. They shouldn't have to deal with a power switch like the one on Hewlett-Packard's HP-47, which is marked 1 and 0 instead of on and off.

The IBM Personal Computer is advanced in this respect, and I'd use it as a case study in my curriculum. The keyboard and monitor connect easily to the computer; the cables are provided, and the connectors are fairly well labeled, either by title or by shape. The computer automatically performs a diagnostic system check when you

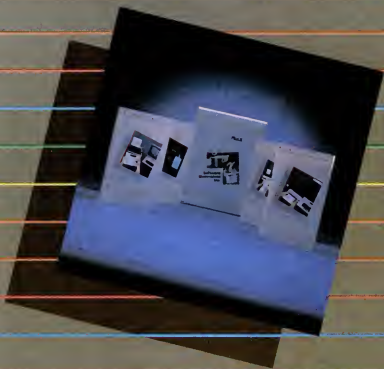
turn it on.

We need hardware as well as software that will streamline the interaction between computers and users. A typewriter keyboard is not an efficient device for entering information into a computer, nor is a television screen an efficient device for transmitting text.

For example, the most common program prompts are YES or NO questions. We usually make users type YES or NO, or at least Y or N, in response.

See *People-literate*, page 40

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INSIDE TRACK/JOHN C. DVORAK

Merger rumor: DEC, AT&T

Sources close to IBM tell me that it is unlikely that IBM will roll out the 186-based home PC until the second half of 1983.

IBM is supposedly **confused** about how to position the product in the market without hurting sales of the hot PC/1.

You should note, however, that for the first time IBM has a booth 400 square feet at the upcoming Consumer Electronics Show in Vegas (January 1983). I think that it'll be there to tout Texas Instruments and others

and maybe have the PC/2 prototype in a hospitality suite. I'm going to the show to find out what I can about the machine.

Remember my old Inside Track item about **Cosmos Computer**? It's the start-up headed by ex-Zilog President Manny Fernandez. Cosmos is supposedly working on a personal computer. A new source told me that it will be a **Smalltalk machine**. What is interesting is that Cosmos won't be licensing Smalltalk from Xerox, but will develop

its own version. Get this: Cosmos' Smalltalk is supposedly based on the description of Smalltalk in the special Byte magazine issue.

While I'm on the subject of magazines, I was told that the **entire staff** (including salespeople) is about to leave a newish, fast-growing, monthly computer magazine. About a half-dozen publishers have been trying to buy the thing, and one of them has decided it would be easier and cheaper to **steal the entire staff**. This is being encouraged by the owner of the magazine, who has, I'm told, not treated the staff fairly.

Normally, I don't like to play guessing games in the column, but I'm sworn to some secrecy on the subject.

I thought you'd like to know what happened when you find one of the magazines you subscribe to turns into a four-page newsletter.

The best rumor of the month comes from our East Coast Editor, Dave Needle. He tells me that everyone in Massachusetts is **abuzz** over the rumor that AT&T has offered to buy out or merge with Digital Equipment Corporation.

This probably stems from the DEC-UNIX connection and AT&T's desire to put together a marketing staff (being a monopoly, a company doesn't develop sharp marketing expertise) so it can truly compete in the real world.

Taking over DEC would give AT&T an immediate market share, talented marketing types and credibility. Couple that with AT&T's technology and it could give IBM a tough nut to swallow.

The next trend in video games may be "theme" video games for fast-food restaurants. A friend of mine presented a plan for a **Big Mac game** to McDonald's, and "the next thing I knew they were in bed with Atari." I guess he presented the plan to the wrong guy.

Anyway, the theory is that the recent McDonald's-Atari game cards are a forerunner to the development of arcade games in the restaurant that features **hamburger-munching** meanings. I expect to see **Burger King** and **Jack-in-the-Box** do the same thing.

A recent Wall Street Journal article has it that Coca-Cola is considering making **coke machines** into combination vending machine/arcade machines. They, too, would be "theme" machines. Somehow the game would involve Coca-Cola.

If this trend becomes popular, then can we expect to see **video-game parking meters**, **video-game pay telephones** and **video-game pay toilets**—all with a theme? The games might be named "Revenge of the Meter Maid," "Alien Lineman" and "Crap Man."

Did you know that **Donkey Kong** was supposed to be called **Monkey Kong**? Apparently there was a problem figuring out the handwriting or something. ■

People-literate

continued from preceding page
But the new IXO portable terminal has YES and NO keys—and two innovative others marked DON'T KNOW and HELP. Now it's up to software developers to make use of these hardware resources.

We need to exploit the potential of function keys, paddles and joysticks, touch-sensitive screens, mice, graphics tablets and voice recognition and synthesis. The key to people-literate hardware is to expand the ways a computer communicates.

Presenting a curriculum for people-literacy is the easy part. It's far tougher to actually put the changes into practice, but if we mean to produce truly personal computers, the first step is to recognize that the changes must be instituted. ■

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BASIC B+, an interpreter with B-tree subroutines

By Stephen Mann

Keyed file-access methods give you a powerful technique for storing, retrieving and updating data files. Each data record is usually assigned a unique "key," a sequence of bytes for identifying that record.

A typical example of a keyed data organization is a personnel file. In which each employee is uniquely identified by his social-security number. You can retrieve, update or delete records for various employees using your social-security number.

B-tree binary tree access methods are generally considered the most efficient of all keyed file-manipulation

status functions as well. All BASIC interpreters do not have these capabilities, and they provide a rich set of enhancements to standard BASIC.

Finally, BASIC B+ has subroutines for manipulating B-tree files. Function calls let you open an index file, create an entry, find the next entry, delete an index entry and close the index file. An index entry is equivalent to a key.

Each index entry has an associated data record stored in a relative address file—a file where each record is accessed by a unique record number. Each key has a companion record number in the relative file. The program provides a set of BASIC functions

for you to manipulate the relative addressed files; it does not do the manipulations automatically.

To create a complete B-tree record, you first must create a record in the relative address file. The appropriate BASIC B+ function assigns a record number that is then stored in the index file, along with the record key.

To delete a record, you must perform a similar multistep process. First, you query the index file for the record number of the desired key. Then, you delete the data record from the relative address file, using the record number. Finally, you delete the index file entry using the key value.

The nice thing about keyed files is that you can treat them as random access files, using record keys; or you can manipulate them as sequential files.

You have the ability for creating combinations of the two functions also. For instance, you can position yourself also at a specific place in a file using a key value, then you can read sequentially from that point on.

The BASIC B+ package includes the interpreter, a sample program and three utilities called BMODIFY, BREVISE and BVERIFY. You use BMODIFY to change required B-tree

See BASIC B+, page 42

InfoWorld

Software Report Card

BASIC B+ Version 1.31

	Poor	Fair	Good	Excellent
Performance	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

System Requirements

- Z80 CPU
- CP/M 1.4, 2.2
- 32K RAM; 48K recommended
- One disk drive

Price: \$325 (disk and manual);
\$30 (manual only)

Delphi Systems

2260 Compton Avenue
St. Louis, MO 63104

techniques. Delphi Systems' BASIC B+ is a BASIC interpreter coupled with B-tree subroutines. The combination is a good idea; unfortunately, it doesn't work that well.

FEATURES: The BASIC B+ interpreter contains most of the standard features that you would expect in a BASIC interpreter. You have commands for creating, modifying, executing and saving programs as well as commands for manipulating CP/M directories, such as ERASE, PROTECT and DIR.

This interpreter includes a second class of capabilities that offers the BASIC statements themselves. BASIC B+ has a standard complement of statements for handling files and manipulating variables and constants. Additional statements include multiline function and subroutine calls and standard conditionals and control statements (GOTO, FOR...NEXT, IF...THEN...ELSE and so forth).

You can input most BASIC B+ statements directly to the interpreter for immediate single-line execution, or you can include them in a complete program.

BASIC B+ also has features that let you perform CP/M system calls; it provides extensive input, output and I/O

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BASIC B+

continued from preceding page
parameter values for buffer configurations and index file structure; and you use BREVISE to make minor revisions to the interpreter, based on instructions from Delphic Systems. To detect a damaged interpreter COM file, you use BVERIFY.

PERFORMANCE: Unfortunately, I was not impressed with BASIC B+. It has both minor, annoying problems and some major bugs.

BASIC B+ is a delicate package. To use it successfully, you have to be very careful, even though many primary features and the B-tree routines function properly. You can encounter a lot of potential pitfalls while developing

and running software with this interpreter, however. A few examples should suffice.

If the interpreter attempts to execute a program line that has an error, it stops and displays a (usually) appropriate error message. If you have already opened any files, though, you may be in trouble.

A common response to an interpreter error is to fix the problem, re-save the program on diskette and then reexecute the program. Sometimes, when I tried to re-save my corrected program, I would get a "no file space" error message. The program would wipe out my source file in the process also.

After wrestling with this problem a few times, I found that the re-save function

would work properly if I first closed the files that had been left open. This is the most significant bug I found using BASIC B+.

I did encounter a whole series of less serious problems, though. I could not get the printer output to work, even after talking to someone at Delphic Systems. My printer port works fine for all my other software.

The file-open routines let you create CP/M filenames of all lowercase characters. Unfortunately, there is no way to remove these files from your directory. Occasionally, I somehow managed to create garbage program lines while editing them with the B-edit command.

I also encountered problems with the BMODIFY utility. I was able to read

my CP/M PIP.COM file: BMODIFY pulled data out of the PIP file and displayed it as current incorrect parameter values. There was no attempt to verify that the file being modified was a legitimate copy of the BASIC B+ interpreter.

If you give BMODIFY a filename comprised of lowercase characters, it gives you a bad sector BDOS error. Of course, when that happens, your system grinds to a halt.

EASE OF USE: The BASIC B+ manual states that "this manual assumes that the user knows how to connect the terminal and is familiar with the terminal keyboard." BASIC B+'s authors assume that you have a reasonable knowledge of CP/M and high-level computer languages, particularly BASIC. As a result the manual includes minimal tutorial material about binary trees.

Using the interpreter is fairly simple, but using the B-tree capabilities is another matter. You must set up initial B-tree system parameters using BMODIFY, and I have already mentioned some of the problems with that program.

The manual states that the default values for these parameters are useful for "a wide variety of applications."

Unfortunately, these parameters were not set up as stated. The sample program provided on the diskette did not work the first time I tried it.

To effectively use the B-tree routines, you have to be able to handle fairly technical material on buffer allocation and be able to determine optimal or useful values for B-tree node or key allocations. This material is definitely not for beginners. **ERROR HANDLING:** BASIC B+'s error handling is only fair. I found one serious and several less serious problems with the error handling.

The serious problem concerns INPUT statements. If you input more values than the INPUT statement is expecting, the interpreter crashes, forcing you to reboot. It is possible that your files may become scrambled in the process.

There are times when you see "unknown error" error messages. Also, if you execute a program successfully and then immediately input an erroneous command to the interpreter, you get "Error Line=6553 Error #...," where the error number is correct, but the line number is obviously wrong.

DOCUMENTATION: The BASIC B+ documentation is not good, in my opinion. The table of contents is eight pages and looks as though it were written by at least two people. There is no index or summary of commands and statements; both are sorely needed.

I found inaccuracies and errors in the manual. For instance, it inaccurately documents the open-data-file function (FNOP) as returning a string array. Also the manual says the Control-X keystroke will cancel the current line; actually the Control-U keystroke performs this function. Control-X, in fact, does nothing on my system.

It supplies little explanation of various error messages that you may encounter. The documentation is poorly organized; it is difficult to find important material.

SUPPORT: I talked to Delphic Systems. See BASIC B+, page 43

Data Technology Industries™



SOFTWARE DIVISION

CP/M SOFTWARE

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IBM PC SOFTWARE

TCS - more to be announced.

SYSTEM REQUIREMENTS - All software requires a CP/M operating system with all such indicated requirements listed below.

1. RECOMMENDED SYSTEM - CP/M 2.0 or higher, 48K memory, 200K dual disk, 24-80 cursor addressable terminal, 132 column printer
2. 48K memory or higher
3. 5.25K memory or higher
4. 64K memory or higher
5. CP/M 1.4 or higher
6. Runs under CBSD
7. CBASIC-2
8. BASIC 80 (MBASIC) 4.51
9. Signed license may be required.
10. CP/M serial if required.
11. BASIC 80 (MBASIC) 3.0 or higher.
12. Requires Z80 CPU.
13. Associate system only.

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Delphic Systems responds to BASIC B+ review

Stephen Mann's review of our product contains good information. It identifies some minor problems that can occur in the first release of a complex product. Delphic Systems is committed to resolving all problems as soon as they are called to our attention.

Response

tion, but we must take exception to Mann's classification of "bugs" for some of these problems he experienced.

In response, we would like to point out:

1. If he had used the CLEAR command with the proper parameters, he would not have had the "no file" error.

2. The printer problem may be related to the CP/M BIOS on Mann's system. Our program has an OPTION command that allows the output protocols to be modified; however, this product has been working (without modification) on many different CP/M systems without printer problems.

3. BASIC B+ does allow the creation of CP/M filenames composed of lowercase characters. Such files cannot be accessed at the CP/M prompt level by PIP or the ERA command; however, these files can be managed and deleted by BASIC B+. Clever programmers have used this feature to protect their programs! Also in this vein, a privacy statement allows password protection of source programs.

4. A global REPLACE command operates similarly to the "QA" feature in

WordStar. You can inflict substantial damage on a program with the incorrect use of this command. We do not view this as a problem, however.

5. Lines entered for immediate execution that contain errors cause 65535 to be returned as the line number. Since line numbers only go up to 65525 (which the manual states on page 8), the 65535 value was chosen to indicate a direct-mode error. It is not a bug.

6. Mr. Mann is correct in assuming that you must be familiar with BASIC programming. On page 2 our manual states: "This manual is intended primarily as a syntax reference." That is

why we have also included a substantial reading list for learning BASIC.

Our product was designed for experienced programmers who have reached the limits of their existing languages and need more capabilities and features.

7. The Input statement did have a bug. It has been corrected.

8. The minor problems with BMODIFY and the sample program have been fixed.

9. Any inconsistencies in the current documentation will be addressed in a forthcoming revision. An index and command summary will be added.

BASIC B+ has many new features that set it apart from similar products. These allow greater productivity, more creative programs and an easily supported product. These aspects of our product could have been emphasized rather than the minor problems.

We are dedicated to eliminating any problems with our product. We feel that BASIC B+ is a much needed product whose time arrived several years ago. Our firm has filled an industry need, and we will continue to strengthen and update BASIC B+.

Jack G. Bafer, President,
Delphic Systems

BASIC B+

continued from preceding page
tems twice. My first problem was that the provided sample program did not run. A company rep explained that the B-tree parameter settings were not correct, and suggested that I change them with BMODIFY.

I made my second call when my printer began to form-feed blank sheets of paper when I tried to output data to it. Delphic Systems did not provide any useful suggestions; the most promising comment was that I use DET to breakpoint my CP/M output routine and examine the characters actually being sent to the printer.

SUMMARY: BASIC B+ has enough serious problems that I hesitate to recommend it to anyone. It is a good idea whose time has not yet come. ■

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Perform linear circuit analyses with Tatum's ECA

By Tim Danelliuk

ECA is a linear-circuit-analysis program available from Tatum Labs for both TRS-80 and CP/M systems. It is a design tool for the electrical engineer, electronics hobbyist and others who perform circuit analyses. The TRS-80 version is available for both Models I and III in disk or cassette versions.

FEATURES: ECA is a general-purpose circuit-analysis tool. It presumes that users are familiar with circuit design, and are merely using the program to eliminate the tedious calculations involved in such design. In other words, it's not a substitute for knowing what you are doing!

The program performs both AC and DC analyses, but it is limited to *linear* problem solving. This means that you cannot accurately examine certain classes of circuits, such as low-voltage transistor operation, with ECA. You can, however, analyze many common circuits with it, and save a lot of time.

The program deals with circuits by using a nodal technique. This means that you describe the circuit you want analyzed by defining its nodes, or connection points. ECA lets you have resistors, inductors, capacitors, voltage sources and current sources in your circuits.

You can have controlled or un-

controlled voltage and current sources. An uncontrolled source is something that has a fixed value and does not change with varying circuit conditions. A controlled source is what you might find in a transistor or operational amplifier.

For controlled sources, you can specify the gain of a voltage source or the transconductance of a current source. Thus, if you need to model active devices such as transistors, tubes or operational amplifiers, you do so by simulating their operation with a combination of resistors, capacitors and voltage/current sources.

The ECA manual includes models

for various common active devices such as transistors and FETs (field-effect transistors).

With any component, you specify its nominal value and, if you desire, its tolerance around that value.

Using a word processor, a text editor or the built-in editor, you construct your circuit in the computer's memory using ECA terminology. In so doing, you build an ASCII text file that describes where in the circuit every component is connected. The size of circuit that you can model varies with the amount of memory in the system.

In any case, the maximum number of nodes is 64, and the maximum num-

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InfoWorld Software Report Card

ECA

	Poor	Fair	Good	Excellent
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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ber of branches in the circuit is 127. ECA, however, has a feature that can handle circuits of virtually unlimited size. The circuit is broken down into subcircuits of less than 64 nodes or 127 branches. ECA then analyzes the subcircuits one by one. It uses the results of each subcircuit analysis as the inputs for the next subcircuit it analyzes.

Once you have completely described the circuit, you have several options for the actual analysis. ECA can perform any of these options on any single circuit, group of nodes or on the entire circuit (i.e., every node in the circuit). This is handy in complex circuits, where a complete analysis would be prohibitively time consuming.

Essentially, there are four types of analysis. First, you can specify a DC (direct current) analysis. This gives you the DC voltage at the selected nodes in the circuit.

Second, you can specify an AC (alternating current) analysis. You can specify any frequency or range of frequencies for this option. If you se-

See ECA, page 46

'What's 3 years old and 3-D?'



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72ANWZ

ECA

continued from page 44

lect a range of frequencies, you can choose between either a linear or logarithmic frequency increment. This mode of analysis results in a display of voltage, relative dBV (decibels referenced to voltage) and phase at selected nodes in the circuit.

Third, you can choose a "worst case" analysis. This uses the tolerances specified for each component to determine the operating conditions of a circuit for various component values. For example, if a resistor has a value of 100 ohms plus or minus 10%, ECA can give you the effect this has on the circuit as the resistor varies over this range. This is helpful in the design.

of mass-produced electronics, in which you usually don't find exact design values of components.

Finally, there is a comparison mode. This permits you to compare the values of one circuit analysis to another. You could use this to compare the performance of your own circuit to that of an industry-standard design.

You can send the results of any of these analyses to the screen or to a data file for permanent storage.

ECA has complete support for the logical devices in your system such as the printer, disk files and so on. It even provides commands that let you route I/O from one intended device to another. You could, for example, send everything intended for the screen to the printer.

PERFORMANCE: This package performs exactly as the manufacturer claims, with no unpleasant or unexpected problems. It also runs fast, because it is written entirely in machine language.

Obviously, more complex circuits require more time for analysis. The claimed worst-case performance it did not verify this is about one minute per frequency in an AC analysis.

The choice of commands is also good. You can do virtually any practical linear analysis with ECA. The worst-case analysis is particularly useful, because it helps transfer laboratory designs to the real world of mass production.

I also liked its ability to sweep through a range of frequencies in the

AC analysis, because this gives you a quick indication of how circuit performance varies with frequency.

ECA has a few weaknesses, however. First of all, there is no way to model diodes of any kind. Second, you cannot specify the AC phase of your voltage and current sources. The next version of ECA does allow you to do these things, however.

More serious is the fact that ECA does not give you the option of displaying circuit currents instead of voltages.

A final complaint is that I could not find a way to store certain standard models, which would be included in larger circuits, as data files. For example, you have to represent all transistors, current sources and resistors. It would be nice if you could define this once and then reference it by name wherever it appears in the nodal description of the circuit. Presently, you have to enter the transistor model manually each time you use it in a circuit.

ERROR HANDLING: ECA handles errors flawlessly. In no case did any error cause a lack of data, and the error recovery was straightforward and obvious. Short descriptive error messages help to define what caused the error.

ECA is well integrated with the DOS. It honors special drivers and options that you may have installed, and I had no DOS-related errors.

EASE OF USE: This product requires a thorough reading of its documentation for proper use. Once you have mastered its command syntax, however, ECA is simple to use.

This is a technical product intended for technical users, who will have no difficulty using ECA.

DOCUMENTATION: Approximately 60 pages of documentation, in a three-ring binder, accompany ECA. Although each command is well explained, I would have liked to see more examples. The manual includes examples of a complete analysis, though, and these help to clarify the use of the system as a whole.

The writing style is clear, and even novice computer users should have minimal difficulty understanding it.

SUMMARY: Oddly, good scientific and technical software for microcomputers is rare. Although this product can't compare with a mainframe, state-of-the-art analysis package, it is an excellent package.

In fact, it is the best of its kind and price (i.e., a microcomputer circuit-analysis package under \$200) that I've seen to date. If you design circuits and want to cut your on-paper design-time significantly, this is the package for you!



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Accu-Shapes for Apple II micros draws shapes

By Richard Hart

Accu-Shapes is to graphics programs what screen generators are to text programs.

For example, if you're developing a data base, you can take the time and trouble to write the code for the display on the screen. But for a few bucks more, you can get one of those screen generators that does it for you. Likewise, if you're writing a game that requires small characters on the screen (aliens, cars, houses or whatever), you'll find life much easier with the assistance of Accu-Shapes.

Special character sets and other graphic symbols are also applications

PERFORMANCE: I used the program to generate an airplane, a stick-woman, a gorilla and a tall building. On occasion, I found visual noise on parts of a highly detailed screen. These were in the form of vertical hyphens in the lower left-hand part of the screen.

Accu-Shapes performs as advertised. The program provides no easy way to mix graphics and text, however.

I did an organizational chart for a small corporation, with a title for each box, and mixed graphics and text by creating a character set each time I had to label a box. I would have liked to use a joystick or digitizer pad in-

stead of the keys) to mix graphics and text.

EASE OF USE: This package is complex, not complicated, but full of options. More than 20 commands are possible, not counting selection of colors. Do you want to stretch the left side? Erase a line? Use the trace mode, or low resolution? It takes some getting used to.

I found some of the command names confusing. Most of the names are mnemonic, but a few don't make sense. The C key stands for center the cursor, and V stands for vertical, but the program says that B stands for horizontal. Beg pardon?

Also, I question the use of the names of the cursor condition—Erase is Erase, but why not call Retain Pen up? And why not call Plot Pen down? Logo has made those terms almost standard.

Of course, you always build a wish list after using a package like this one. A restore-last-erase function would be helpful in case you goof. The status line might tell you what the current pen color is. In addition, you can't catalog a disk without quitting the program.

One delightful feature is that you can declare how the program is to

See Accu-Shapes, page 49

InfoWorld

Software Report Card

Accu-Shapes

	Poor	Fair	Good	Excellent
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

System Requirements

- Apple II
- DOS 3.3
- 48K RAM
- One 5 1/4-inch disk drive
- Color monitor or TV recommended

Price: \$50

Accent Software

3750 Wright Place
Palo Alto, CA 94306

for this program.

FEATURES: Accu-Shapes uses a cursor to draw shapes on your video screen. It stores those shapes, in tables, onto disk. A table can contain from 20 to 250 shapes, 15 to a "page," depending on their size and type.

You control the cursor with the diamond formed by the keys W, X, A and B (well, almost a diamond). The keys give you up, down, left and right control.

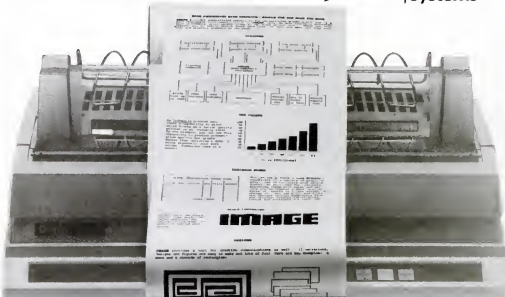
Pressing the space bar cycles the cursor through the Retain, Erase, and Plot modes. Erase is Erase, but think of Retain as Pen up and Plot as Pen down.

You first create your shape (a train, a face, maybe a Russian-alphabet character) in low resolution. In this mode, your screen is 40 cursors wide by 40 cursors long. When you later display it in high (279 by 159) resolution, it becomes the size of one-twentieth of the screen. This allows good definition in the shape. You can get larger high-resolution shapes by butting up two of the low-resolution "boxes."

Accu-Shapes creates all shapes in color—up to eight colors with high resolution. Although you can easily use the package with a black-and-white monitor, a color monitor is almost necessary.

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InfoWorld Software Report Card

Image

	Poor	Fair	Good	Excellent
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Accu-Shapes

continued from page 47
draw your shape up on the screen. That is, does it construct the shape beginning in the upper left-hand corner? Or does the shape spiral into existence?

During creation of the shape, you can scroll your shape up, down, left and right, and, in this way, can position it precisely within the low-resolution box.

ERROR HANDLING: A warning on page 5 about scrolling your shape around the screen says, "It is important to watch for the edges of the screen because if a portion of your shape leaves a screen edge, it shall never return. Ever." A shape ought to merely bump into the edge of the screen and refuse to enter never-never land.

A few I/O errors, some involving improper file names, are not properly trapped. For example, trying to save a shape table to a write-protected disk crashes the program with no error message—even the reset key is disabled.

In all other cases involving errors, I found that the program would either refuse to accept input, or give a clear reason, in English, why something went wrong. I wish all software packages did the same!

DOCUMENTATION: The Accu-Shapes manual is a 5-by-7-inch staple-bound pamphlet, typeset, with a good layout. But during tutorial sections—sections that ask you to make a rectangle and move it left, right and so on—there isn't a single illustration.

At one point, the manual hopes that you have been following directions so far, "or by now you will be totally disoriented comparing what we tell you the program is doing and what's actually happening on the screen." Why tell? Why not show? A graphics package is, by its nature, visual. Really, how can you describe to someone the results of his actions without a picture? Color illustrations are a must.

The manual begins with a clear table of contents, and a nicely organized summary of key commands appears on its final pages. No software documentation can get an "excellent" rating without an index, though.

Otherwise, there are few problems with the documentation more serious than minor discrepancies. Page 4 of the manual says that the cursor coordinates displayed on the lower right-hand part of the screen are separated by a comma. In my copy of the program, at least, they were not.

On the positive side, the program provides help screens and a demonstration/tutorial program on the disk.

This is the second program I have encountered this year that has an automated demonstration on diskette. I like the idea a lot. A ghost user draws and edits shapes on the screen for nearly 20 minutes as you watch. It's like watching a player piano.

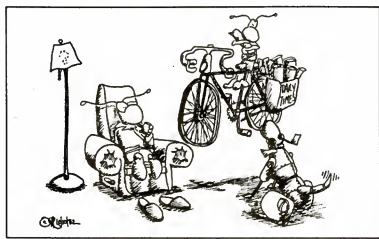
In each mode, help is available in the form of a menu that lists all commands currently at your disposal. To see the help screen, just type M for menu.

This program assumes you are familiar with the graphics features of Apple's BASIC. For example, the program refers to the DRAW and

XDRAW functions twice during the explanation of high-resolution traces, but never defines them.
SUPPORT: Accent Software doesn't supply a number, but is listed in the Palo Alto phone directory. I called once and was greeted by a human, not an answering device. So, Accent scores a point.

Accu-Shapes is copy-protected, and no backup diskette is included. The company, however, offers to replace any damaged or worn disk for \$10 and proof of purchase.

SUMMARY: This is a well thought-out program, and the price is right. If you're in the business of writing programs that need shapes, don't waste your time reinventing the wheel. Draw it with Accu-Shapes. ■



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VIC Turtle Graphics cartridge program by HES

By Edward F. Hele

VIC Turtle: is it a language? Turtle-graphic systems are a Logo subset, or a stand-alone graphic language or a software gadget. In any guise, they are proliferating.

VIC Turtle Graphics is a plug-in cartridge that overrides the resident Commodore VIC BASIC interpreter.

A user-defined character, called the turtle, traces its way across the screen, drawing pictures according to commands in a stored program.

As a Logo language feature, the turtle has gained a certain respectability. Human Engineered Software has evidently targeted this particular version

to the home market, with a colorful package and slick manual.

FEATURES: VIC Turtle Graphics, by David Malmberg, is clearly intended to help youngsters learn the basics of programming, with color and pictures. It is not only easy and versatile, but it is also a true programming environment, with command structure and syntax similar to more "mature" systems.

The syntax contains labeled subroutines, loops, IF and logical operators, just like "number crunching" languages. Instead of numbers, it crunches graphics. Syntax is limited because it is strictly for graphics; for

example, you can't nest loops.

The "check for" command allows the turtle to look ahead, to see if a particular character is in the next position it is to occupy.

Everything starts from a menu, which gives a choice of writing, executing, editing or saving a program. You may also choose a "trace" mode that allows you to follow execution step by step.

The line-oriented editor automatically numbers lines as you enter them. By pressing return, you can always return to the menu.

Turtle commands are English-like. The "calculate" command precedes

all arithmetic statements and assignments, which are written in the same syntax as BASIC. Variables are limited to numeric values, and variable names may be one letter only.

Direct specification commands, such as "turtle color green" or "border color white" control the border, screen and character colors. To make the turtle leave a trail, you enter "pen down." The command "pen up" has the opposite effect.

Turtle movement commands are "down," "up," "right" and "left." The word *beep* followed by a number tells the computer to make a music-like sound, which you can program to

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Software Report Card

VIC Turtle Graphics

	Poor	Fair	Good	Excellent
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

System Requirements

- Commodore VIC 20

Price: \$39.95

Human Engineered Software
71 Park Lane
Brisbane, CA 94005

roughly parallel musical notation.

The turtle can lay a trail of text as well, for some interesting effects.

PERFORMANCE: Because it is in a cartridge, you can use the turtle as soon as you turn on your VIC. No tape, memory expansion or disk drive is required, although these accessories will help.

The system not only worked, but required minimal reference to the manual. Execution is quick, almost too fast for comprehension. Because of its simple syntax and front-end error-trapping, VIC Turtle probably will be readily adopted by elementary educators.

The package blurb states that the system is for "children from six to sixty," which might be something of an exaggeration, since the six-year-old

See VIC Turtle Graphics, page 52



YOU GOT THE HARD PART RIGHT. NOW FOR THE SOFT PART.

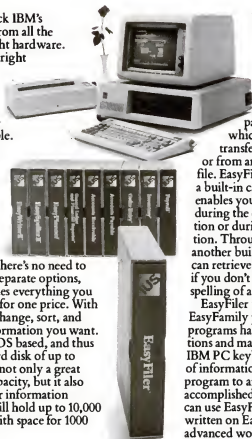
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EasyFiler is PC/DOS based, and thus can be stored on a hard disk of up to 40 megabytes. That's not only a great increase in storage capacity, but it also allows for much faster information retrieval. EasyFiler will hold up to 10,000 individual records, with space for 1000 characters per record.



EasyFiler has a number of features which will help you increase the power and performance of your IBM PC. It is compatible with BASIC,

which means you can transfer information to or from an IBM BASIC file. EasyFiler also includes a built-in calculator, which enables you to compute data during the entry of information or during report generation. Through "Soundex," another built-in feature, you can retrieve information even if you don't know the exact spelling of a word.

EasyFiler works with other EasyFamily programs. All IUS programs have similar instructions and make full use of the IBM PC keyboard. Integration of information from one IUS program to another is easily accomplished. For instance, you can use EasyFiler with text written on EasyWriter II, the advanced wordprocessing

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VIC Turtle Graphics

continued from page 50

would require considerable vocabulary and typing skill.

EASE OF USE: After you browse through the manual for a few minutes, you should be writing turtle routines without complications. By the time I had finished entering the first lesson in the manual, I was improvising successfully.

When you are writing, you can simply press Return and E to test the program, or T to trace for debugging. This trace routine is especially helpful when you are chasing an errant turtle around a complicated pattern.

The editor is line-oriented, which usually is the kiss of death for ease of

use, but Malmberg has managed to include relatively easy insertion and deletion routines, together with an easily accessed listing method. Since the editor is ciresident with all the other system features, you don't have to suffer the cumbersome access procedures that usually accompany line-oriented editors.

ERROR HANDLING: The editor checks each line for errors as you enter it. There is a slight pause after you press Return at the end of an entry, before the prompt appears for the next line. If the newly entered line contains a syntax error, an error message appears, inviting you to reenter the line.

Run-time errors stop execution and result in an explicit error message.

The delete command of the editor

can destroy the whole program if you don't provide line numbers. To help you avoid this accident, the author has provided a warning message and the prompt, "Are you sure?"

DOCUMENTATION: The manual is 72 pages long, in a pocket-size format designed to fit in the cartridge box. It is divided into a tutorial and a conventional explanation of the syntax, both well written and clear.

At the back is a two-page bibliography, entitled, "Turtle Resources," which lists the major books in the field and a turtle-type toy.

I did a double take at two entries in the list. Items 5 and 6 were WSNF and Kidstuff, other turtle systems for Commodore machines. The author not only praised these competitors, but

listed their prices and addresses.

The manual is set in professional type with standard spacing. As a result, the wider letters overlap to the point that the copy is sometimes obscured and unreadable. Aside from this unnecessarily irritating and amateurish feature, the package is well documented and professional.

In spite of its deceptively simple terminology, the manual does use some terms, such as "parameter," that as some see familiarity with computer jargon. A few grammatical errors crept in, but generally the copy is clean and up to this publisher's usual standards. **SUMMARY:** VIC Turtle Graphics is a slick graphics system that is sufficiently crash-proof for elementary students.

After a hard day at the FORTRAN, it was a pleasure to tickle the keys for a little recreational programming. Although turtles are supposed to be for kids, even the limited VIC screen can hold a grown-up's interest.

Since there is no way for a user to interact with a program while it is running, the system has no apparent game applications. Moreover, I couldn't find a way to access machine code for adding such operations.

While the manual is OK for home users, it's not as helpful for teachers as the one supplied with the Kidstuff turtle system on the PET.

The inherent limitation of VIC's 22-column screen makes the system less visually interesting than similar programs for the 40-column PET. ■

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PALO ALTO, CA—A software package that offers the thrill of video spacewar games while teaching touch-typing skills is available for the first time from Lightning Software to users of Atari 400 and 800 personal computers.

Called MasterType, the program consists of 17 progressive lessons allowing individuals to develop mastery of the keyboard at their own rate, according to Bruce Zweig, president of Lightning Software.

"The universe is not always kind to those who type slowly," he noted. "Typing skills are essential for word processing, programming and use of business software applications. MasterType not only helps computer users learn to type, but also to operate the equipment more efficiently," Zweig said.

"MasterType incorporates exciting visual and sound effects that are equivalent to the best video games," Zweig said.

"The program is written in a combination of assembler language and compiled BASIC for maximum speed," Zweig added.

MasterType operates on an Atari 400 or 800 with 32K memory and one disk drive or a 48K Apple II. The program is priced at \$39.95, including instructions. For more information, contact Lightning Software, P.O. Box 11725, Palo Alto, CA 94306. ■

Read InfoWorld
Classifieds

Alcor Pascal, a topnotch compiler for TRS-80

By Tim Daneluk

The Alcor Systems' Pascal package is the latest entry into the TRS-80 Pascal-compiler market. It is notable for its completeness, its adherence to the original Jensen and Wirth Pascal standard and its compatibility with all major TRS-80 disk-operating systems. For this review, I tested the compiler on a TRS-80 Model I running under LDOS.

FEATURES: This package is divided into three parts—the editor, a Pascal compiler and run-time support. Additionally, Alcor has supplied a "patching" program to aid in making changes to this version to coincide

with tabs and homing the cursor as well.

Basically, text that you see on the video display is what is entered. You invoke certain commands such as loading or writing a file with a special control sequence using the Clear key. The program has several on-line help files that you can either list from the operating-system command level or have the editor load for examination. These help files remind you about the various editor and compiler commands and how to use them.

The compiler itself comes in two versions. The first version loads the entire compiler into memory at once. Virtually all of the available user memory

must be free (i.e., no high-memory user-options loaded) for it. This version of the compiler is fairly fast in compiling Pascal source code, but is limited in the size of program it can compile.

The second version of the compiler occupies substantially less memory and uses several disk-file overlays during compilation. This compiles a program more slowly than the first version of the compiler, but it has the advantage of being able to handle much larger source files for compilation. Supposedly the nonoverload compiler can handle source programs up to about 1000 lines, while the

overload version is good for programs up to about 4000 lines long.

The compiler recognizes standard Jensen and Wirth Pascal source statements with two exceptions. First, you don't have Get and Put procedures, and second, you cannot pass procedures or functions as parameters to other procedures and functions. Also, you have 20 enhancements to standard Pascal in this package. These include having the abilities to compile functions and procedures separately, turn on double-precision arithmetic via a compiler switch, represent constants or characters in hexadecimal

See Alcor Pascal, page 54

InfoWorld

Software Report Card

Alcor Pascal Version 1.2A

	Poor	Fair	Good	Excellent
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

System Requirements

- TRS-80 Models I and III
- TRSDOS-compatible system
- 48K RAM
- One disk drive

Price: \$199

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with any new versions the company might release. (Alcor also offers an optional Advanced Development System for its Pascal that includes a P-Code (Pseudo-Code) optimizer, and a Z80 native code generator.

Alcor is calling its editor Blaise. (Blaise was the first name of Pascal, the seventeenth century scientist and philosopher after whom the Pascal language is named.) The Blaise editor is a general-purpose, full-screen, cursor-oriented text editor. Blaise itself was written in Pascal, though Alcor does not supply the source code for it. It provides all the usual editor commands for inserting, deleting and changing text. It features commands for replacing text, setting tabs, clearing



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Alcor Pascal

continued from preceding page notation, add OTHERWISE to the CASE statement and find the storage address of a variable with the Location statement.

Alcor Pascal also comes with a complete set of library routines. These include routines to modify and examine memory directly, to handle I/O to and from a port, to call assembly-language routines from a Pascal program and a routine to control recovery from an I/O error.

You get a library of TRS-80 functions as well. It includes a full complement of graphics commands and routines that access the system time and date.

Finally, you have a library of string

routines that are functionally similar to the string commands found in Radio Shack Disk BASIC. Included are LEN, LEFTS, RIGHTS, MIDS, STRS and many others.

The run-time support for programs compiled with Alcor Pascal is provided in two programs. You use the Run program to execute programs that have been compiled to P-Code. This is useful in checking out individual program modules for proper operation. Linkload is a linking program that you use to link one or more compiled modules into one executable (ICMD) file. Because Alcor Pascal supports independent compilation of procedures and functions, you can create a family of commonly used routines and use Linkload to include

them in larger programs as you need them.

PERFORMANCE: This is an impressive, though complex, package. The individual parts of Alcor Pascal all seemed to work as claimed. This software is well integrated with the operating system except for several fairly minor aspects.

First, the editor has some incompatibility with the LDOS keyboard drivers when you use the Clear key. An Alcor spokesman indicated that the problem occurred only on some Model I systems. The first Alcor Pascal newsletter provided patches that solved the problem by redefining the Clear key as the slash (/).

Second, this Pascal only allows you to access three standard "logical

devices"—the video display, the line printer and a "dummy" device. You have no other support for any devices that you can create in an LDOS system. Finally, the various parts of this package are limited in their ability to handle lowercase user input. For example, keying in a lowercase filename in the editor causes a DOS error, and the program then aborts.

These are minor problems, however, and the package generally executed quickly and reliably. It is ideal for program development when you need portable code.

Alcor claims that its soon-to-be-released CP/M version of this product will be completely P-Code-compatible with the TRS-80 version. This means that, as long as no machine-dependent routines are written into a program, it will be fully portable from a TRS-80 to any CP/M machine using Alcor Pascal!

EASE OF USE: No compiler I've ever worked with has been simple to use, but this package is the easiest I've used. The command syntax is straightforward and easy to learn. The linking loader is especially simple to use for this type of program. Alcor Pascal is not a product for the complete novice, but it is easily usable by most moderately experienced programmers.

DOCUMENTATION: This aspect of the Alcor package is outstanding. It contains over 200 pages of documentation with sections on the editor, system implementation, Pascal tutorial, Pascal language reference and an index.

The tutorial is especially well done. It is written for a programmer who might not know Pascal, but has a good understanding of another high-level language such as BASIC.

The master disks include the source code for the various examples found in the tutorial sections. This is the first compiler product I've ever seen—for TRS-80 or CP/M—that has excellent tutorial material as well as thorough technical information.

ERROR HANDLING: Alcor Pascal handles errors much as any compiler does. When the error resides in the operating system, the compiler relies on the DOS to display the error message. You also have a complete set of compiler error messages as well as a display of the stack and heap status when a Pascal program has finished execution. At no time did I encounter any unexplained errors.

SUMMARY: This is a topnotch Pascal compiler well worth its cost. I commend Alcor for its policy of allowing programs compiled under this Pascal to be distributed without any royalties. I think Alcor Pascal is so well conceived that it may become the Pascal standard for microcomputers when the CP/M version is released. ■

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Net-Works: bulletin-board system for Apple II

By John Prather

The combination of the personal computer and software such as Net-Works may well be responsible for a phenomenon that will be the 80s' equivalent of the CB radio of the 70s. That peculiar trait that allows someone who is too shy to speak to his neighbor across the street, but yet irresistibly tempts him to pick up a microphone and give the world a "Big 10-4," is at work again in the realm of the personal computer.

In combining a modem with your computer, you create a device that has some striking similarities to the CB, along with capabilities that seem as if they come right out of a science-fiction story. Private electronic mail (E-mail) public bulletins, program downloads and many other features are now available on any Apple equipped with a modem and a disk drive. The only thing separating you and your Apple from similarly equipped Apples around the world is your telephone bill!

If you always thought that The Source or CompuServe was based on a nifty idea, this program is for you. You can start your own small version with Net-Works. There have been many programs written that allow an Apple equipped with an auto-answer modem to answer a telephone and connect to an incoming call from another modem-equipped computer. Both the D.C. Hayes Micromodem II and the Novation Apple-Cat II, for example, come with software that allows you to leave the modem-equipped Apple in the auto-answer mode for taking messages from, or external control by, another modem equipped terminal.

There have been a handful of programs that go beyond this initial level of sophistication and allow controlled external use of the Apple with user-password protection to limit use of the system and various electronic-mail

and bulletin-board functions. One of the first of these was the CP/M dial-up program by Ward Christensen. This was followed by Apple-based software, P.M.S. by Bill Blue and now Net-Works by Nick Naimo.

FEATURES: The Net-Works program arrives on a DOS 3.3 disk and requires a minimum of one disk drive and a D.C. Hayes Micromodem II. The program includes configuration routines that enable you to use additional drives and additional features if your Apple is equipped with a clock card and/or a printer.

A refreshing feature of the program is the lack of disk copy-protection schemes and a well-remarked AppleSoft program that you can customize. Based on the interesting innovation implemented on dozens of Net-Works bulletin boards scattered around the country, this feature has been well received. The configuration program itself allows you to customize the sign-on welcoming message, which appears when anyone dials the phone number of your Net-Works-equipped Apple. New users of the system are assigned temporary passwords automatically by the program, and name, address and phone-number information are logged in by the system.

New users have limited access to the system until their passwords are validated. The system operator (known as SYSOP in the jargon of bulletin boards) has the option of validating the temporary passwords for new users to give them full access to the system, or removing the passwords of individuals whose activities on the system are undesirable.

One of the customization features available and used on a number of the boards is a multiple-security-level scheme that allows you intermediate, multiple levels of access to system features. The SYSOP, of course, has full access to the system, either from the

keyboard of the host Apple, or remotely from another terminal.

The bulletin-board system features both private electronic mail that is addressed to individual validated users of the system and public messages or bulletins posted for optional review by all users (even new unvalidated users). Users can send additional general-interest messages under separate menu items on the system, and the system has provisions for user downloading of files and/or programs from the system.

The program does not allow uploading of programs from the system users, as is allowed by programs such as On-Line by Bill Blue. On a system in an area likely to receive numerous calls, however, this feature would


probably overload the available disk space on a 5¼-inch-drive system. My experience on a two-5¼-inch-drive system has been that with prudent arrangement of files between the drives, there will be space for approximately 100 average-length bulletins and about the same number of individual pieces of electronic mail.

The program has a well-designed interrupt routine that allows the SYSOP to intercede on a call and "chat" with the system user or temporarily extend the user's security level. You also have an option of exercising a chat command that pages the SYSOP if he or she is within earshot or line-of-sight of the system Apple, in order to initiate the on-line chat mode.

See Net-Works, page 56



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USE IT...IT WORKS

Net-Works

continued from page 58
 this type of system. I saw no instances of any hackers crashing the system on any of the systems that I accessed. DOCUMENTATION: The initial issue of the program through Computer Station was accompanied by a 28-page ring-bound manual that was brief but adequate to get the system running. Subsequently, Nick Naimo, the program author, and Computer Station ended their contractual arrangement amicably. Nick is handling the distribution and support of the program now.

I don't know if Nick is continuing to use the same manual with his distribution of the program, but I received

the program updates with excellent documentation files contained on the program disk itself. This would be a handicap, however, if users did not have access to a printer.

SUPPORT: There have been two updates issued for the Net-Works program since the original issue. As I previously mentioned, the first update to revision 2.1 allows you to shortcut the log-on procedure if you are an experienced user.

A subsequent update to revision 2.2 has been distributed to allow you to customize the program to extended disk space systems such as Winchester drives or 8-inch drives more easily.

In pleasant contrast to occasional misadventures in getting questions answered with large software houses,

I found it a pleasure to call and talk directly with the program author when I pursued some questions about Net-Works.

SUMMARY: If you have an Apple II and a D.C. Hayes Micromodem II, and are willing to let your machine spend its idle hours answering the phone, Net-Works will open an entire new area of use for your computer.

You should be aware of several possible "side effects," however. As your system acquires more validated users, the sense of responsibility for keeping the system up will grow. If this gets out of hand, you may wind up with a 24-hour-a-day system and never have personal use of your Apple again.

If you operate the system in your home, be prepared to consider a sec-

ond telephone line for the computer with sound-deadening material around the bell. I mention this because of two additive factors. Computer users who make a habit of dialing up bulletin boards usually do their calling when phone rates are the lowest—that is, late. If your system is on the East Coast and the caller is a late-night hacker from the West Coast, the ringing phone will become a harassment.

The use of these bulletin boards is somewhat addictive. I am aware of one East-Coast user of my Midwest board whose modem use accumulated an \$875 phone bill for one month, which was undoubtedly cause for some concern on the part of that 13-year-old user's parents.

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By Dan Robinson

PeachText is the new name for the second-generation version of what the microcomputer community knows as Magic Wand, and it's as impressive as ever. Besides all of the standard word-processing features, PeachText contains a superior file-merging/form-letter capability.

FEATURES: You fire up the program and the main menu is displayed for you. Your options include Edit/Print/Copy/Delete or Rename Document, Display Directory or Get Help. You can command a change of disks, select the default drive or call up one of the PeachText support programs: Magic

Spell, Magic Messenger or Magic Address.

The Edit menu shows the files being processed together with the characters used and the remaining capacity. You also see the tab columns and line width.

You can scroll PeachText's file a line or a screen at a time, either backwards or forwards. You can delete a character, word, line or marked block. You can insert a single character or open the text from the cursor to the bottom of the screen.

PeachText permits you to embed format commands in the text or enter them from the Print menu. You can set

left, right, top and bottom margins and center the text.

The program supports both indents and hanging indents and you can specify a fixed paragraph indentation. Both hard spaces and soft hyphens are included. You can have nonprinting comment lines written into the text or have prompts sent to the video screen.

PeachText supports search-and-replace functions. It duplicates marked blocks of text on your instruction. You can set page length and page numbers, and specify the number of acceptable widow lines at the bottom of a page. Headers and footers of any

length are included; you can include format commands in them.

You can have a specified number of lines, a block or an entire file loaded, saved or printed. When editing is completed, if you haven't specified a new filename, you can write the file with the old name; the original file becomes a backup version.

The Print module has its own menu. You can view the status of print parameters even as they change via text-format commands. You can choose that printing be performed flush left or right, or justified.

If the printer supports it, you can add boldface printing to your text.

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InfoWorld

Software Report Card

PeachText

	Poor	Fair	Good	Excellent
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

System Requirements

- Z80-based system
- CP/M
- 48K RAM
- Two disk drives
- Printer

Price: Varies

Peachtree Software

3 Corporate Square, Suite 700
Atlanta, GA 30329

PeachText allows you to print sub- and superscripts, change the pitch, turn proportional printing on and off and output printer-control codes. You can have the text formatted on the screen exactly as it will appear in print.

At your instruction, the program pauses to accept one or more new lines from the keyboard during printing. You can print a selected range of pages, rather than the entire document, and send a completed file to the disk instead of to the printer for automatic spooling.

By the way, this program works with any Z80 computer; Peachtree issues different versions of PeachText, how-

How to Choose the Best Modem For Your Apple*

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110,000 baud operation	Yes	Yes	Yes
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Auto-Dial/Auto-Answer	Yes	Yes	Yes
Fits completely inside Apple	No	No	Yes
Operates without additional external interface	Yes	Yes	Yes
Touch-Tone® Dialing	No	Yes	Yes
"Single-Modem-Chip" Reliability	No	No	Yes
Auto Monitor	No	No	Yes
Self Testing	Yes	Yes	Yes
Warranty period	2 yr	1 yr	2 yr
Suggested Retail Price	\$379	\$389	\$299

*Micromodem, Haves, Micromodem Products, Inc. Address: 11 Novation, ModemCard, SSM Microcomputer Products, The Source. Source Microcomputing Corporation, a subsidiary of The Retailer's Digest Association. Dow Jones News/Retrieval, Dow Jones & Company, Inc. Apple is a registered trademark of Apple Computer.

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ever. You can configure a few printer codes yourself to suit your printer.

Up to this point in the review I have covered the good-but-standard features you would expect to find in any modern word processor. It's in the form-letter/file-merging area that PeachText stands out as a word processor.

PeachText uses its search function to fill in templates, or outlines, for a report or letter, searching for the default key of an exclamation point. At that location, you can key in the required data or call it from a disk file.

You can have a listing of the files on a disk displayed and select one, with all or part of the file merged into the current text. If the file to be merged includes coded paragraphs, you can name the section, jump to it and load it. Setting up boilerplate letters using templates and inserted file sections is a snap, even for a beginner.

PeachText also recognizes variable data, which you input from the keyboard or from a data file. If the data is to come from the keyboard, the requirement is prompted by the program, or you can provide your own, such as, "Enter the Name."

The variable data can come from a disk file. You can tell PeachText which record to begin with and on which to end as well as those to skip.

Your variables can be string or numeric, and you can include them in BASIC-like "IF" and "IF NOT" statements to dictate PeachText's actions. You can use them in format parameters or to print selected records when you want to form letters.

You can skip portions of the text file by specifying conditional characteristics. If a political contribution equals \$10, you might wish to print "Thank You," and if a contribution exceeds \$100 you might reply "Thank you very much."

You can put your variables in a DOLLAR.CENTS format, and insert counters in the letter to keep track of sums or records printed.

PERFORMANCE: PeachText expects a 24 x 80 screen, so it won't function properly on small-screen computers, such as a Radio Shack Model I or III with a CP/M conversion: the help file and menus spill over.

On standard office computers that I used for this review, such as the Radio Shack Model II, every feature of PeachText performed without a flaw. The program also includes a means to

query and display a wealth of data on the program's status.

PeachText can display the variables in use, the number of passes it has made through a merged file, buffer sizes, files being used and location in the text file. It's hard to get lost with PeachText.

EASE OF USE: For all of its power, PeachText is surprisingly simple to use. The cursor moves with the arrow keys, and most functions are performed with a combination of control/letter keys. You make use of three major menus that respond to two-letter commands or a Y/N answer to a prompt.

PeachText's form-letter handling permits you to call a template to the screen, merge a basic boilerplate text, call names and addresses from a data file and select paragraphs to be printed based on the information found in that file—all with little effort on your part.

ERROR HANDLING: PeachText didn't fall into any traps that I could devise to try to make it search for non-existent files or print data that wasn't there. It would seem that the program's and CP/M's error-handling techniques are sufficient to keep you out of trouble.

DOCUMENTATION: The documentation is in an easy-to-read lesson-plan form. Newcomers have a number of sample text files on the disk to help them learn. The lessons allow users to help Lincoln compose and edit his Gettysburg Address in a low-key, light-hearted learning session.

A summation of reference data at the end of the 150-page manual helps the experienced operator, and quick-reference cards are provided for the various computer configurations. A new manual is said to be in the works.

SUMMARY: PeachText is an excellent word-processing program with just about every feature any office would desire. Its form-letter capabilities make the program truly outstanding. ■



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IBM

B & L Computer Consultants announces two new products that are available free to interested users. The B & L **Electronic Disk** converts RAM into a 160K disk drive that looks like a single-sided, double-density disk drive. This program requires at least 192K memory. The electronic drive can be used in any application where you would use a regular disk drive.

New Hesp provides two additional types of reset to DOS in addition to the one that is available with the machine. This reset is useful in conjunction with electronic disks and other programs in which information may be in memory when reset is invoked.

Interested users can either copy these programs or order them directly. To receive a free copy, send a blank diskette and a self-addressed, stamped mailer. B & L Free Programs, Numbers 1 & 2, 226 South Cole, Boise, ID 83709.

Star Computer Systems now markets an **integrated accounting system**, a legal timekeeping-and-billing program and a property-management package.

The four modules in the integrated accounting program can also run as independent programs. They consist of a general ledger, accounts receivable, accounts payable and payroll. All

of the packages are programmed in CBASIC except the legal timekeeping-and-billing program, which is written in MBASIC.

The programs can also operate on any CP/M or MP/M-based microcomputer. The integrated accounting system retails for \$1250; each individual accounting module is priced at \$400. The property-management and legal timekeeping-and-billing programs retail for \$850. Star Computer Systems, 18051 Crenshaw Blvd., Torrance, CA 90504.

Udimenu for DOS and **Udimenu** for BASIC are two full-screen menu systems from DB/DC Software Associates. By using the Udimenu system, users can invoke any of 36 programs or batch files with a keystroke while retaining the capability of interacting directly with DOS or BASIC. Both supply users with a Help facility and the ability to implement secondary menus. The price (as of January 1, 1983) will be \$24.95. DB/DC Software Associates, P.O. Box 4695, Manchester, NH 03108.

Radio Shack

The **Magnum System**, designed for use with TRS-80 Models I, II and III, allows investors to test stock or commodity trading methods to find out profit potential. Trading systems can be refined and improved, and you can

produce buy/sell recommendations, graphs, hard copy and reference sheets. Price is \$350. Management Services, 2901 Clendenen Lane, Longview, TX 75601.

CP/M

Alist is a program for maintaining alphabetically ordered lists of information. Data input is buffered so you can enter up to 50 records without a disk wait. Alist is set up to do Mail/Phone List. Its data format accepts two-, three-, four- or five-line addresses.

You can resort records by ZIP code, create and merge files. Price is \$150. Honor System Software, 2562 East Glade, Mesa, AZ 85204.

Execute Corporation announces the availability of **The Business Analyst** series of business-applications computer software. This product consists of multiple applications that may be integrated as users require. Each provides the business manager with specific task-management facilities and the ability to relate one application to another in the series.

Included in the series are text processing, personal records management, spreadsheet and communications. The **Business Analyst**, designed for any CP/M or MS-DOS-based microcomputer, is currently running on IBM, Xerox, Teletype and Victor 9000. The price is \$450 to \$1300, depending on modules selected. Execute Corporation, 12200 Park Central Drive, Dallas, TX 75251.

Micro Associates announces the release of an **integrated payroll and invoicing program** that is designed for organizations that perform services on an hourly basis. An accounts-receivable option that interfaces directly with the invoicing procedure is also available.

All functions of the program are based on the input of employee time-sheet data only. It can maintain records for up to 250 employees. Reports generated include time-sheet proof, payroll register, checks, tax reports and W-2/1099 statements. The invoicing function allows selective weekly, biweekly or monthly billing, independent of the payroll cycle.

The accounts-receivable option allows automatic posting of man-hour charges and maintains original and current balances for each open invoice. **Payroll Invoice** uses the CP/M operating system and Microsoft MBASIC. The package price is \$1950 and the accounts-receivable option is \$350. Micro Associates, Inc., 2300 Highway 365, Box 1331, Nederland, TX 77627.

Apple

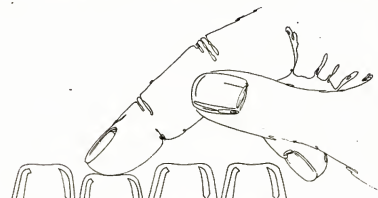
The **DOS Enhancer (TDE)**, a machine language utility that uses DOS 3.3, FPBASIC and INTBASIC, creates copyable disks that start up directly and load a RAM card. TDE-related disks run and save binary and BASIC programs up to 500% faster than standard Apple DOS. A DOS "free" command for free disk space is included. UBI or DOS 3.3 disks can be updated with TDE's QuickDOS. Price is \$69.95. S & H Software, 58 Van Orden Road, Harrington Park, NJ 07640.

Mainline is a program for data access and retrieval. This product requests and passes information from remote mainframe data bases to microcomputers via telephone. It is designed to automate the access, format and transfer of data, which allows users to concentrate on functional problem solving. Mainline is for users who regularly need access to a wide range of data. Gregg Corporation, 100 Fifth Avenue, Waltham, MA 02254.

Other

Quick Brown Fox is not just something to type as a keyboard exercise. It is a word-processing package for Commodore VIC 20 and Commodore 64 users. Its features include full-line and global-edit capabilities, text moving, "boiler-plate" tab and margin setting, right justification and proportional spacing. Quick Brown Fox also automatically reformats edited text. Price is \$65. Quick Brown Fox, 348 Broadway, Suite 4F, New York, NY 10012.

InfoWorld is unable to test every product announced in this section. All claims attributed to the products have been made by manufacturers or by firms marketing these items.



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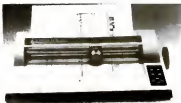
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New peripherals

Yokogawa is offering two new four-color plotters. One, the **Model PL-1000**, is compatible with most small computer systems, the firm says. It unit sells for less than \$1200; it can handle any paper size up to 11 x 15 inches and can produce foils for overhead projectors.



PL-1000 four-color plotter from Yokogawa



Stand-alone programmable graph plotter from Yokogawa

The PL-1000 features a standard RS-232C interface and has built-in firmware commands that include 9 line styles and 15 special symbols.

Yokogawa also sells a **stand-alone programmable plotter** that you can program via a keyboard with LCD display to do complex data plots. The firm says it takes only 30 minutes to train on the system, and that it plots bar, circular 'pie' and line graphs from simple key-in commands.

An optional disk drive lets you store oft-used plots. The price is \$2800, Yokogawa Corporation of America, Shenandoah, GA 30265.

Commodore has developed a **single-board upgrade** that converts the CBM 8032 microcomputer into a SuperPET. The standard CBM model

8032 contains 32K of RAM and includes Commodore BASIC. With the SuperPET board, the upgraded machine features an RS-232 interface, 64K of additional RAM in 8K chips, stand-alone 6502 microprocessor as well as a pseudo-16-bit, 6809-based processor.

An external switch for processor selection also allows programs designed for the 8032 computer to operate without modification. The upgrade board provides six languages: Waterloo Computing Systems' microBASIC, microPascal, microFORTRAN, microAPL, microCOBOL and 6809 assembler.

The board sells for \$795 at Commodore dealers. Commodore Business Machines, Inc., Computer Systems Division, The Meadows, 487 Devon Park Drive, Wayne, PA 19087.

A new low-cost (less than \$100), hand-held computer called the **Network Inquirer** lets users access hundreds of public data bases. You select the network you want from a menu and select the appropriate number. Then the portable computer dials the requested network and logs on and off, or else redials the network.

All central billing is provided by The Business Computer Network, which



The Network Inquirer, a hand-held computer, lets users access public data bases.

manufactures the Network Inquirer, so users can access hundreds of public data bases without going through complicated sign-on and password procedures, according to the company.

Among the data bases now available are The Source, CompuServe, Dow Jones and UPI news. You can also use the terminal for electronic mail. The Business Computer Network, 211 South Fourth Street, Basin, WY 82410.

Mitac is offering a 5 1/4-inch floppy-disk drive called the **Applemate**, designed to be compatible with the Apple II computer. According to the firm, the track format and storage capacity are identical to that of the Apple II's disk drive—even the cabinetry matches the Apple. Made by Mitac, Inc., the unit is distributed by Digital Facilities Ltd., 1062 East 105 Street, Brooklyn, NY 11236.



The Pro-Tech locking stand secures Apple II and II Plus computers.

The **Pro-Tech Locking Stand** secures any Apple II or Apple II Plus computer, as well as up to three disk drives and any size monitor, against theft, according to the manufacturer.

The stand is made of 16-gauge steel; it lets you attach external fans and secures them as well. Besides providing security, the Locking Stand also functions as an organizer and bookcase.

The price is \$145 for single units, with quantity discounts. Seagull Enterprises, 11 Cove Avenue, Berkeley, MA 02780.

Small Systems Engineering (SSE) is offering two products that beef up the capabilities of Commodore's PET/CBM significantly. The **Softbox** is a utility disk that lets you run the CP/M operating system on the PET/CBM. The Softbox uses the PET or CBM as its terminal; it "talks" to any combination of Commodore and Corvus drives. The unit costs \$895.

The **Hardbox** is a hard-disk interface/intelligent controller that lets you add one or more Corvus hard-disk drives to a Commodore PET/CBM. According to SSE, the Hardbox is compatible with CBM DOS versions 1 and 2, and the unit operates with existing Commodore programs. The Hardbox appears to the Commodore computer as a high-speed, high-capacity floppy drive. Together with the Corvus Constellation multiplexer, the Hardbox can also be used with the Commodore computer in a multiuser system. The price is \$695. Small Systems Engineering Corp., 222 B View Street, Mountain View, CA 94041.

InfoWorld is unable to test every product announced in this section. All claims attributed to the products have been made by manufacturers or by firms marketing these items.



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Micro system helps train future generals at Army War College

CARLISLE, PA—Computerized battles fought with joysticks on a video battlefield have become a national obsession. Perhaps the most sophisticated of the genre, though, is played in deadly earnest by combat professionals.

The U.S. Army War College, an elite "postgraduate" school that educates

Altos computers at the Army War College can simulate everything from weather and terrain to air defense and intelligence for officers in training.

officers to fill the highest military ranks, has developed a microcomputer simulation for its students that closely models the real thing.

Using 18 Altos AC58000-10 computers (one for each "war"), massive gameboard maps and sophisticated software that took two years to develop, the college pairs two eight-person teams in battles of remarkable realism.

The battles, however, spill not a drop of blood.

The simulation accounts for everything from weather and terrain to air defense and intelligence. Played in a room bisected by a curtain, the games can last from a few days up to a couple of weeks.

The sessions are usually conducted with a 12-to-1 time-compression ratio, although simulations with no time compression whatever are occasionally specified. With a 12-to-1 time-compression, incidents that would take 12 hours in "real time" only take 1 hour in game time.

According to Captain Aaron Coleman, chief of computer simulation and modeling, the use of a microcomputer is the college's most advanced approach yet.

"Originally, we used an ordinary board-and-dice version modeled on a commercially available war game," he recalls. This early exercise proved cumbersome because everything from scorekeeping to settling the outcome of a battle was accomplished manually.

Players spent as much time "keeping the books" on the game as they did actually playing it.

"We next upgraded to a simulation using a large mainframe," Coleman continues. "At first, the computer only took care of the random element, generating results of combat and allowing us to model such things as bombing attacks and ground movement."

The mainframe did create a more realistic simulation, but it permitted only two "armies" to contend at once—a substantial drawback in that the school conducts up to 18 seminars at any given time.

After considering several alternatives, the college determined that purchasing a microcomputer for each "conflict" would fill the bill for the least cost, and it purchased a single Altos system for development.

"At first, we thought we could get by with a floppy-disk system," says Coleman. "But we soon realized that a program this size requires the storage

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Though less exciting than harnessing the power and speed of your computer to find mistakes, using Active Trace to avoid mistakes is equally valuable. Cross-reference utilities are not revolutionary and they're often overlooked by BASIC programmers. Active Trace produces convenient cross-reference maps and explains their use and value.

Active Trace conforms to your needs. It may be menu-driven or run by command files. The output is directed to the disk, screen or printer. The complexity or size of source code is unlimited and your Reserved Word list may be reconfigured.

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The software consists of four individual programs totaling over 15,000 lines of code. The game itself consists

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Editor compiles dictionary at home using micro

By Gene Wilburn

It is the job of the dictionary-maker, or lexicographer, to present us with an up-to-date, accurate, printed index to our language. Canadian-based lexicographer Thomas M. Paikeday, chief editor of *The New York Times Everyday Dictionary* (awaiting publication this year by Times Books), has developed an unusual approach to dealing with this formidable and time-consuming task. Employing off-the-shelf technology, he uses a microcomputer to keep electronic surveillance of the linguistic landscape.

The appearance of Paikeday's at-home study illustrates his new ap-

proach to a mammoth task. A traditional dictionary publisher's office is filled with millions of "citation slips," arranged in cabinets like the card catalog of a large library. (Each slip contains a sentence or two [a citation] exemplifying the usage of a specific word or phrase.) In Paikeday's shop, the traditional file he has developed for the past 20 years has been relegated to a storeroom. In its place a row of 5¼-inch floppy disks lines up along his study wall like a collection of 45 RPM records.

According to Paikeday, it was the drudgery of collecting citations that led him to explore electronic alterna-

tives. The daily grind of sifting and collecting evidences of the meaning and usage of words from current sources is so labor-intensive and costly that only a handful of major publishers even bother trying to produce a comprehensive English dictionary. For Independent Lexicographers like Paikeday, the cost of hiring readers, clerks and typists to assist with the job poses a severe restraint. So Paikeday turned to the new micro-chip technology in search of a solution.

"What I saw happening around me," says Paikeday, "was an electronic revolution that had created new modes of delivering information. Teletext and videotex services, such as The Source and CompuServe, provided a new source of vocabulary and usage."

"I saw that, via the telephone lines, I could tap the living language of newspapers such as *The New York Times* and *The Washington Post* in almost every field of activity, from the arts and sciences to sports, entertainment, fashion and finance. What I needed was a means of storing this information and, later, analyzing it."

After a lengthy search, he found the right hardware for his purposes—a customized TRS-80 Model I microcomputer with four 5¼-inch, 80-track double-density disk drives and a 1200-baud modem. Next he hired an expert in machine language to write programs for storing millions of words on

line, yielding citations and making sophisticated linguistic analyses where the appropriate commands were keyed in.

Paikeday uses his microcomputer system to increase his stockpile of current English texts at the rate of a thousand words a minute. With selected citations displayed on his video screen or printed out as hard copy for close study, he stays up to date on the use of such expressions as *bells and whistles*, *computerist*, *vertical integration*, *videotex* and *xenocurrency*. His system can also search out related phrases such as *get it together*, *get it all together* and *get one's act together*.

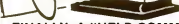
Paikeday's system allows him to do specialized searching, such as lining up all words that begin with *hyper* or contain a specific stem such as *gram* or end in a suffix such as *-ble*. This helps him examine variations in usage, such as *expandable* as opposed to *expandible* and *expandible*.

His system can alphabetize millions of words or list words in descending order of frequency. By checking frequency lists, he can decide which of two words such as *bibliographic* and *bibliographical* is more common.

As impressive as Paikeday's system is, he admits that it is merely a prototype. "I am now looking into the greater speed and power of the new 16-bit and 32-bit microcomputers, and I am eyeing a hard-disk drive for more

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storage capacity."

Even in prototype, Paikeday's system holds enormous potential for dictionary-making, linguistic studies and literary text analysis. Clearly, micro-chip technology is ready for some professional applications that formerly required mainframe computers.

Now that linguists, lexicographers and literary critics have access to affordable computer power, will all of them welcome it? Not right away, according to Paikeday. "There is always resistance to any technology that two largest centuries-old apple carts. Reaction from my colleagues has been mixed."

American lexicographers such as Jess Stein, editor-in-chief of the *Ran-*

dom House Dictionary, and David Guralnik of *Webster's New World Dictionaries*, wrote him enthusiastically after Paikeday gave a talk last December to the annual meeting of the American Dialect Society in New York. "Several lexicographers from Britain and the U.S. have visited my home to see the system for themselves," Paikeday says. "They usually leave shaking their heads, finding it hard to believe such a small machine can do so much."

Colleagues from the world's two largest dictionary-makers, Merriam-Webster and Oxford, have been less enthusiastic. One replied cautiously that he found Paikeday's system "interesting," while another was downright irritated.

Perhaps the giants have reason to be nervous. When Samuel Johnson and Noah Webster produced their dictionaries, they were essentially one-man efforts. Since then dictionary-making has grown into a corporate art requiring an elaborate support structure.

While Paikeday's system is not about to displace the splendid Oxford or Merriam-Webster operations, it, nonetheless, signals a change. The large dictionary publishers will no longer be able to claim highest authority on the current state of the language.

Using Paikeday's methodology, gifted, independent lexicographers from small companies will be able to produce creative new dictionaries

that will rival the authority of, say, a *Merriam-Webster*. They may even be more up to date.

Thomas Paikeday's pioneering effort is impressive both as a spirited contribution to lexicography and as a portent. Any technology that allows the small independent to compete alongside the corporate giant is a technology that will have broad appeal. Micro-chip technology has the potential to transform society into a decentralized structure that will allow most of us to work from our homes. Paikeday's achievements show that this is both possible and highly desirable. ■

Gene Wilburn is a Toronto writer and head librarian of the Royal Ontario Museum

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How to choose and maintain telephone systems

Guide to Key Systems & Mini-PBX's
Larry A. Arredondo, Editor
The Telecom Library
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The choice of telephone systems should be made the same way as the choice of any other capital investment. You should

- determine the requirements
- discover the alternatives
- calculate the costs and benefits and
- buy the best alternative.

Libraries have been written to explain how to do these things. The Telecom

Library's *Guide to Key Systems & Mini-PBX's* is an excellent example of this genre. It tells what kinds of telephone systems are available, what features are available on them, their advantages and disadvantages and how to choose, acquire, install and maintain them.

First, the limitations of the book: It deals with telephone systems that handle up to 250 phones and are contained in a single cabinet. In other words, if you want to choose a telephone system for thousands of users, this book is not for you. If your phone system will have about 100 phones or less, you will find the kind of equip-

ment you are looking for here.

Costs of equipment and installation are not cited. The costly considerations of each phone system (such as employee time and productivity, installation and wiring cost, initial cost, and so forth) are discussed, though. Given the infinite variety of installations and the differences in tariff rates (set by public utility commissions in each region), not providing cost estimates is probably a good choice.

The equipment listings are not comprehensive, since new equipment is appearing all the time. The publisher provides a mail-in form so purchasers of the book can be notified of updates

and revisions, however.

In other words, the limitations of this book are reasonable, or otherwise provided for. One book can't do everything, after all. But what does it do?

It simply provides a well-written, straightforward discussion of telephone systems, from single lines through key systems (phones that can connect to more than one line, and have buttons that control and signal which lines are in use), to small PBX's (operator-assisted private branch exchanges).

Take chapters 8 and 9, for example. Chapter 8 discusses the factors that bear on selecting a small PBX. First, and very reasonably, it compares a PBX to a key system, comparing the advantages of the PBX (room to expand, digital technology, unique features, lower price in some cases) to those of the key system (cheaper equipment, cheaper line costs in many cases, ease of use, easier installation).

Chapter 8 goes on to discuss limitations to the size of a PBX, provides a list of questions to ask vendors of equipment about size and expandability, defines and tells how to use many of the features of the PBX, and it also gives you things to consider about the location of the electronic equipment.

PBX equipment

Chapter 9 is a listing in some detail of different PBX equipment. It provides basic technical data, physical dimensions and information about the unique characteristics of the equipment and the manufacturer. By itself, chapter 9 would be useful to someone considering the purchase of a PBX. In combination with chapter 8 and the listing of manufacturer's addresses in the back of the book, it is worth its weight in precious jewels.

The book provides the same comprehensive discussion and listing of equipment and features for key systems, electronic key systems and "hybrid" key systems. In addition, it provides valuable advice on how to go about negotiating a contract and installing and financing the new equipment. Even Ma Bell negotiates—if not on price, on other things.

If this book cost less than \$10, would recommend that everyone who pays for more than one telephone line run out and buy it. It would be worth it just for the lists of features available on phone systems and the glossary of telephone jargon included.

The book costs \$75. And it's a paper back. That probably limits its audience to businesses that contemplate changes in their telephone service because of expansion (or contraction).

In that case, I believe this book will repay its initial cost as soon as a manager or analyst begins to do research on the alternatives to the current system, because he will save at least a day in shopping simply because of the list in this book. That says nothing about the possible savings in monthly costs more productive employees, long distance tolls and the reduced likelihood of making an expensive mistake in purchasing the wrong equipment. In the medium-to-short run, this book is cheap compared to the wealth of aid offers.

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Usasi unravels two cases of recursion

By Michael Swaine, *HW Staff*

"This time I do have a puzzle for you," Casey Standard said.

Mr. Usasi didn't look up from the letter he was studying. "Yes, and a difficult one, Ms. Standard."

"No, no," she said, "not the letter. I created a puzzle for you."

He looked up. "You did what?"

"Here," She took the letter from his hand, replacing it with a slip of paper. "Try that."

"Hmm," he hummed. "I see that it is not a simple letter-substitution cipher, since the patterning of the letters is too regular."

"I think you will find," she said, standing at the window with her hands behind her back in imitation of his favorite pose, "that letter frequencies will not help, although it is a letter-substitution cipher. There is an extra level of encoding that makes it a little tricky, but the second level is a code most people have probably used at some time. The letter substitution is of course trivial." She peered at him out of the corner of one eye.

He lay the paper down on his desk and rubbed his chin. "Is the encoded message of any great interest?"

"It's a clue to the cipher."

He raised an eyebrow. "A coded message that conveys no information but a clue to its own decoding? Useless and recursive, Ms. Standard."

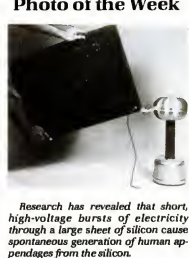
"And cute," she added.

He smiled noncommittally and studied the message for some minutes. As he bent over the paper, Casey Standard walked around the room, whistling "Rock around the Clock."

Eventually, Mr. Usasi looked up. "If you are whistling that raucous American rock-and-roll tune to distract me, I fear you have failed, Ms. Standard. I have solved your puzzle." He demonstrated the fact.

"Oh, good," she said, clapping her hands. "I was afraid I'd made a mistake in the encoding. I'm glad you got it. But you're wrong about the song. It's the Chinese version, from the movie, *Chan Is Missing*. OK, now tell me your puzzle."

His face clouded as he picked up the letter he had been studying. "I have received a letter from a man I never expected to hear from again."



Research has revealed that short, high-voltage bursts of electricity through a large sheet of silicon cause spontaneous generation of human appendages from the silicon.

"Not George Flaming Duck?"

"That is one of his aliases. He asks my help. Here is the letter."

She took the letter gingerly, as if it might be coated with acid. "That guy gives me the willies. He's too powerful. And he plays with his power."

"Only in our little domain, Ms. Standard. We, as fictional characters in his column, are subject to the whims of this Duck person, or Swaine, to give him his real name as I did in his August 16 column. In his own domain, however, he appears to be himself a pawn of the laws of chance, at least according to his letter."

"One of his columns got lost!" she exclaimed, reading.

"Yes, The November 8 column, wasn't it? Fairly recent; the trail is not yet cold. And he offers some tantalizing clues."

"You're going to solve it for him, aren't you?"

"I must solve it. I can't help it; it is how I am constituted. It is my nature to solve puzzles."

"He's counting on that, you know. He's your nemesis, but he knows he can make you solve his puzzles for him."

Mr. Usasi nodded. "I cannot deny what you say. Nor can I not solve the puzzle. But—" He smiled at her. "Perhaps I can solve it and keep the solution to myself."

Not a chance. Read this column next week and (barring the kind of accident that befell the November 8 column) you'll see the solution to Casey Standard's puzzle and to mine.—George Flaming Duck.

Casey Standard's double cipher:
Fuizb Fuufstmbz "fifbz" boebz "fifbz" pvmteibz jfwfbz Jubz bxwbz.

George Flaming Duck's letter:
Usasi—

I need your help. One of my InfoWorld columns got lost or stolen. The entire page, including Next Time, disappeared. The missing column

should have run in the November 8 issue. Here are the facts.

At 5:10 Friday, October 22, paste-up artist Rachel Wasser put an accent mark over the second 'a' in Yucatan and handed the page to paste-up supervisor Sahnta Pannutti, who in turn passed it to production coordinator Cynthia Puig. Puig put the page in the customary pink metal box for the courier. Pannutti confirms that Puig boxed the page.

Wasser, Puig and Pannutti left between 5:30 and 6:15, when the courier arrived. Typesetter Marilyn Lombardi, who arrived at 5:45, handed the pink box to the courier, and it was prepared to be on its way to Max Fax, the printer, in Chicago. The printer called on the following Monday to say that, although the pink box and the other pages were there, the End of File page was nowhere to be found.

Puig and Lombardi, and only those two, each had the box in her possession briefly before it left with the courier. The box was sealed by Lombardi and opened by the printer, so the courier is in the clear. The suspects are Puig, Lombardi and Fax.

I'm not a professional detective like you, but I was able to ascertain some additional facts. Each of the three suspects, I learned, drinks a characteristic beverage, and each has a pet that coincidentally has the same name as one of the other suspects.

One Max owns a cat; the other is a fish. Cynthia the dog likes her owner's tea, but Marilyn is allergic to the smell of coffee, so it's fortunate that she is not owned by a coffee drinker.

When the page was eventually found, it showed a Perrier stain. The guilty party must have been the Perrier drinker. Find that Perrier drinker, Usasi.

By the way, I've invented the details that I wasn't able to determine quickly, but that wasn't bother you. I wanted to get this real-life mystery to you for our computer crime issue.

—George Flaming Duck

Next time

Is it time for the 8-bit epitaph? Is 8-bit dead? In our next issue we'll see what the biggest honchos in the industry think about the future of the 8-bit computer.

Eight-bit microprocessors brought a lot of respect to the micro-computer industry. The 8-bit micros, at first, were ridiculed as skinny weaklings among the digital giants, but slick engineering and persistence have made 8-bit micros acceptable, and often powerful and useful, computing machines.

The advent of the 16-bit microprocessor, however, especially with the development of the unoriginal but popular IBM PC, may spell doom for the 8-bit micro. Has R&D in the 8-bit world come to a grinding halt? Will 16-bit software become available quickly enough to replace 8-bit code? We'll have all the answers in our next issue.

John Dvorak, who has been obtaining reports about the latest R&D efforts at Apple, will reveal some more exciting tidbits in his *Inside Track* column. We understand computer-company employees are amazed at the accuracy of John's information.

One of our editors will take you on a tour of Disney's new Epcot Center in Florida.

Software reviews will include Data Perfect, a data-base manager for the Apple and Atari computers; PDS, a utility program for the TRS-80; and Space Waste Race, also for the TRS-80.

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